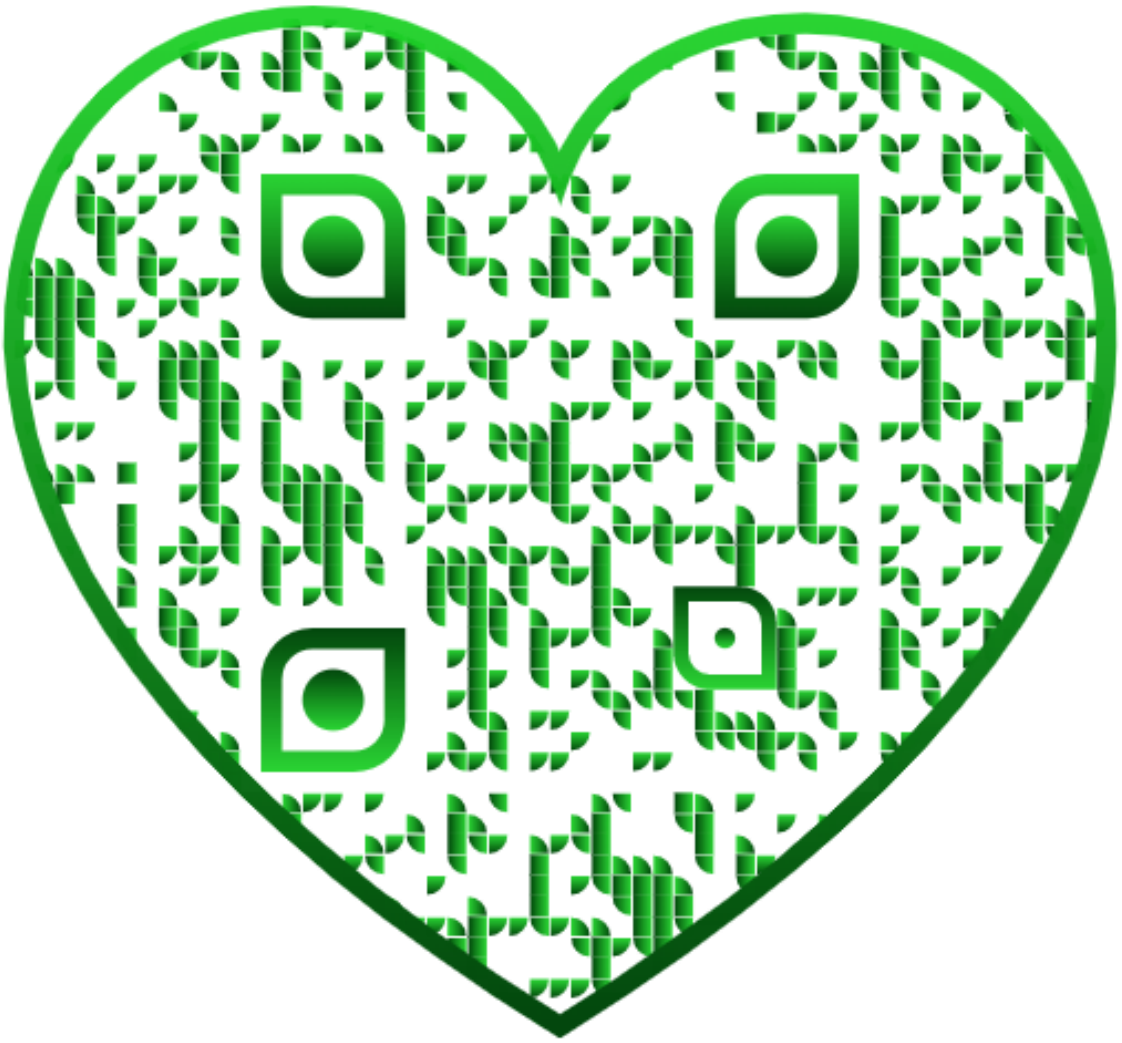
ANGELS DON'T PLAY THIS HAARP

ADVANCES IN TESLA TECHNOLOGY

Jeane Manning

Dr. Nick Begich



Environmental Warfare?

The U. S. Government has a new ground-based "Star Wars" weapon which is being tested in the remote bush country of Alaska. This new system manipulates the environment in a way which can:

- Disrupt human mental processes.
- Jam all global communications systems.
- Change weather patterns over large areas.
- Interfere with wildlife migration patterns.
- Negatively affect your health.
- Unnaturally impact the Earth's upper atmosphere.

The U.S. military calls its zapper HAARP (High-frequency Active Auroral Research Project). But this skybuster is not about the Northern Lights. This device will turn on lights never intended to be artificially manipulated.

Their first target is the electrojet - a river of electricity that flows thousands of miles through the sky and down into the polar icecap. The electrqjet will become a vibrating artificial antenna for sending electromagnetic radiation raining down on the earth. The U.S. military can then "X-ray" the earth and talk to submarines. But there's much more they can do with HAARP. This book reveals surprises from secret meetings.

PROJECT CENSORED - a prestigious panel of journalists - judged HAARP to be in the top ten under-reported news stories of 1994.

POPULAR SCIENCE - As a front-cover story, HAARP began to be revealed in September, 1995. This book is - the rest of the story.

The High-frequency Active Auroral Research Project is

The HAARP that Angels Don't Play.

About the Authors

Dr. Nick Begich is the eldest son of the late United States Congressman from Alaska, Nick Begich Sr., and political activist Pegge Begich. He is well known in Alaska for his own political activities. He was twice elected President of both the Alaska Federation of Teachers and the Anchorage Council of Education. He has been pursuing independent research in the sciences and politics for most of his adult life. Begich received his doctorate in traditional medicine from The Open International University for Complementary Medicines in November, 1994.

He co-authored the book Earth Rising - The Revolution: Toward a Thousand Years of Peace with James Roderick in January 2000. He is also the editor of Earthpulse Flashpoints, a new-science book series. Begich has published articles in science, politics and education and is a well known lecturer, having presented throughout the United States and in nineteen countries. He has been featured as a guest on thousands of radio broadcasts, reporting on his research activities including new technologies, health and earth science related issues. He has also appeared on dozens of television documentaries and other programs throughout the world including BBC-TV, CBC-TV, TeleMundo, and others.

Begich has served as an expert witness and speaker before the European Parliament. He has spoken on various issues for groups representing citizen concerns, statesmen and elected officials, scientists and others. He is the publisher and co-

owner of Earthpulse Press and is also under contract as Tribal Planner for the Chickaloon Village Council, a federally recognized American Indian Tribe of the Athabascan Indian Nation.

Dr. Begich is married to Shelah Begich-Slade and has five children. He resides just north of Anchorage in the community of Eagle River, Alaska, USA.

Jeane Manning is an experienced magazine journalist, reporter for daily newspapers and former editor of a community newspaper. A decade of re-searching nonconventional electrical energy technologies culminated in her book The Coming Energy Revolution (Avery Publishing Group, NY, 1996). She is co-author of a 1994 book published by Auckland Institute of Technology Press, New Zealand, Suppressed Inventions and other Discoveries. Born in Cordova, Alaska, she tracked HAARP with deep interest. She now lives in Vancouver, Canada.

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MESSING WITH 'MOTHER EARTH' AND HER KIDS ELECTROMAGNETICALLY: A BRIEF HISTORY OF EVENTS & DISCOVERIES

1886-8: Nikola Tesla invents system of Alternating Current (AC) power source and transmission system. As 60-pulse-per-second (Hertz) AC power grids spread over the land, Mom Earth will eventually dance to a different beat than her usual 7-8 Hertz frequency.

1900: Tesla applies for patent on a device to "Transmit Electrical Energy Through the Natural Mediums".

1905: U.S. Patent #787,412 issued for above.

1924.: Confirmation that radio waves bounce off ionospherel (electrically charged layer starting at altitude of 50 kilometers).

1938: Scientist proposes to light up night sky by electron gyrotron heating from a powerful transmitter.

1940: Tesla announces "death ray" invention.

1945: Atomic bomb tests begin - 40,000 electromagnetic pulses to follow.

1952: W.O. Schumann identifies 7.83 Hertz resonant frequency of the earth.

1958: Van Allen radiation belts discovered (zones of charged particles trapped in earth's magnetic field) 2,000+ miles up. Violently disrupted in the same year.

1958: Project Argus, U.S. Navy explodes three nuclear bombs in Van Allen belt.

1958: White House advisor on weather modification says Defense Department studying ways to manipulate charges "of earth and sky, and so affect the weather".

1960: Series of weather disasters begin.[2]

1961?: Copper needles dumped into ionosphere as "telecommunications shield".[3]

1 Victor A. Schmidt, Planet Earth and the New Geoscience. Kendall/Hunt, Iowa, 1986, pg. 428
2 Editor's page, "Weather Modification",Saturday Review 2/5/1977.
3 Keesings Historisch Archief, courtesy of Nigel Harle, Netherlands,

1961: Scientists propose artificial ion cloud experiments. In 1960's the dumping of chemicals (barium powder etc.) from satellites/rockets began. [4]

1961-62: U.S.S.R. and U.S.A. create many electromagnetic pulses (EMPs) in the atmosphere; 300 megatons of nuclear devices deplete ozone layer by about 4%.[5]

1962: Launch of Canadian satellites & start of stimulating plasma resonances by antennas within the space plasma.6

1966: Gordon J. F. MacDonald publishes military ideas on environmental engineering.[7]

1960's: In Wisconsin, US Navy Project Sanguine lays extremely low frequency (ELF) antennae.

1968: Moscow scientists tell the West that they have pinpointed which pulsed magnetic field frequencies help mental and physiological functions and which frequencies do harm. [8]

1972: First reports on "ionospheric heater" experiments with high frequency radio waves, at Arecibo.9 A 100 megawatt heater in Norway built later in decade can change conductivity of auroral ionosphere. [10]

1973: Documentation that launch of Skylab "halved the total electron content of the ionosphere for three hours"(by rocket exhaust gases). [11,12]

1973: Recommendations for study of Project Sanguine's biological effects denied by Navy. [13]

1974: United Nations General Assembly bans environmental warfare.

4 Manfred Scholer, "On the Motion of Artificial Ion Clouds in the Magnetosphere", Planet Space Sci. 1970, Vol. 18 pp 977 to 1004. Printed in Northern Ireland.

5 National Academy of Sciences, "Long-Term Effects of Multiple Nuclear-Weapon Detonation", 1975 pges. 6-7.

6 Michael J. Rycroft, "Active Experiments in Space Plasmas" Nature vol. 287 4 Sept. 1980, pg, 7.

7 Lowell Ponte, The Cooling. Prentice-Hall, NJ, 1976, pg. 166-7

8 Sheila Ostrander and Lynn Schroeder Super Memory: The Revolution. Carroll & Graf, NY, pg. 303.

9 W.E. Gordon and H.C, Carlson/'Arecibo Heating Experiments", Radio Science,Vol. 9, No.11, pges 1041-7, Nov. 1974.

10 Michael J. Rycroft, "Active Experiments in Space Plasmas", Nature Vol. 287, Sept. 1980, pg. 7.

11 Michael J. Rycroft, "Ionospheric Hole Caused by Rocket Engine", Nature Vol. 297, June 1982, pg. 537.

12 Michael Mendillo, Gerald S. Hawkins, John A. Klobuchar, "A Sudden Vanishing of the Ionospheric F Region Due to the Launch of Skylab", Journal of Geophysical Research, Vol. 80 No. 16, June 1, 1975, pg. 2217.

13 Robert O. Becker, Cross Currents. Jeremy Tarcher LA 1990, pg. 201-3.

1974: High frequency experiments at Plattesville, Colorado; Arecibo, Puerto Rico; and, Armidale, New South Wales heat "bottom side of ionosphere". [14]

1974: Experiments - airglow brightened by hitting oxygen atoms in ionosphere with accelerated electrons.

1975: Stanford professor Robert Helliwell reports that very low frequency (VLF) from power lines is altering the ionosphere. [15]

1975: U.S. Senator Gaylord Nelson forces Navy to release research showing that extremely low frequency (ELF) transmissions can alter human blood chemistry. [16]

1975: Pell Senate Subcommittee urges that weather and climate modification work be overseen by civilian agency answerable to U.S. Congress. Didn't happen.

1975: Soviets begin pulsing "Woodpecker" extremely low frequency (ELF) waves, at key brainwave rhythms. [17] Eugene, Oregon, one of locations where people were particularly affected.

1976: Drs. Susan Bawin & W. Ross Adey show nerve cells affected by ELF fields. [18]

1979: Launch of NASA's third High-Energy Astrophysical Observatory causes large scale, artificially induced depletion in the ionosphere. Plasma hole caused by "rapid chemical processes" between rocket exhaust and ozone layer." [19] "Ionosphere was significantly depleted over a horizontal distance of 300 km for some hours."

1985: Bernard J. Eastlund applies for patent "Method and Apparatus for Altering a Region in the Earth's Atmosphere, Ionosphere and/or Magnetosphere," (First of three Eastlund patents assigned to ARCO Power Technologies Inc.)

14 G. Meltz, F.W. Perkins, "Ionospheric Modification Theory: Past, Present and Future", Radio Science, Vol. 9, No. 11, Nov. 1974.

15 Lowell Ponte, The Cooling. Prentice-Hall, NJ.1976, pg. 169.

16 Ibid., pg, 168.

17 Sheila Ostrander and Lynn Schroeder, Super-Memorv: The Revolution. Carol & Graf Publishers, NY 1991, pg. 299.

18 Dr, Robert O. Becker, Cross-Currents: The Perils of Elecropollution The Promise of Electromedicine Jeremy Tarcher, LA 1990, pg. 233

19 Michael Mendillo, Donald Rote, Paul A. Bernhardt, "Preliminary Report of the HEAO Hole in the Ionosphere", American Geophysical Union, EOS, Vol, 61, No. 28, July 8, 1980, pg. 529.

1986: U.S. Navy Project Henhouse duplicates Delgado (Madrid) experiment - very low level, very low frequency pulsed magnetic fields harm chick embryos. [20]

1980's: In the later part of the decade the U.S. begins network of Ground Wave Emergency Network (GWEN) towers, each to generate Very Low Frequency (VLF) waves for defense purposes .

1987-92: Other Arco Power Technologies Incorporated (APTI) scientists build on Eastlund patents for development of new weapon capabilities.

1994: Military contractor E-Systems buys APTI, holder of Eastlund patents and contract to build biggest ionospheric heater in world High-frequency Active Auroral Research Project (HAARP).

1994: Congress freezes funding on HAARP until planners increase emphasis on earth penetrating tomography uses, for nuclear counterproliferation efforts.

1995: Raytheon buys E-Systems and old APTI patents. The technology is now hidden among thousands of patents within one of the largest defense contractor portfolios.

1995: Congress budgets $10 million for 1996 under "nuclear counterproliferation" efforts for HAARP project.

1995: HAARP planners to test patent number 5,041,834 in September.

1994-6: Testing of first stage HAARP equipment continues, although funding was frozen.

1996: HAARP planners to test the earth penetrating tomography applications by modulating the electroject at ELF frequencies.

1998: The European Parliament's Subcommittee on Security and Disarmament holds a hearing on HAARP on February 5, 1998. Coauthor Begich presents on HAARP and new weapon technologies.

2001-17: Projected period for HAARP operations. Fully operating HAARP developmental proto-type system by early part of the period.

20 Dr. Robert O. Becker. Cross-Currents: The Perils of Elecropollution, The Promise of Electromedicine, Jeremy Tarcher, LA ,1990

Updates - September 2001

In February 1998, while testifying before the European Parliament, I indicated that the United States would violate the Anti-Ballistics Missile (ABM) Treaty with the former Soviet Union. I asserted that the United States would take the position that because the Soviet Union had dissolved, the agreement was no longer valid. On this point, the Members of the Committee could not agree with us because most believed that the United States would honor the agreement, recognizing the Treaty as a stabilizing document for the entire world. In less than ten months from our pronouncement, the United States announced their new initiative for a missile defense system outside of the Treaty. United States Senator Ted Stevens made the arguments just as predicted.

The original ABM Treaty allowed only one defense system in each country - the United States and the Soviet Union. It had been our contention that HAARP represented research which would lead to me eventual deployment of a new missile defense system based in Alaska. We also made clear that me United States was moving forward with new technologies while giving the world, and our allies, the impression mat there was a real effort underway toward reductions in arms. The reality, time would demonstrate, was a new race toward the new technology.

What Ever Happened to Star Wars?

Remember Star Wars, the concept which would move the theater of war to space? In 1995, the funding for Star Wars was widely reported as a dead issue when full funding was defeated by the United States Congress. However, Star Wars did not end as many unpopular programs do - they just get new names.

> "This year the Ballistic Missile Defense Organization (once called the Strategic Defense Initiative) got $3.7 billion. That's up from $2.8 billion in 1995, and is very near the peak level spent during the Cold War."21

The problem was that the United States was not fully covered under its single ABM system, leaving Alaska and Hawaii unprotected. Alaska produces about 22% of U.S. oil requirements, holds all 33 strategic minerals in commercial quantities and represents tremendous natural resource wealth. Hawaii is a strategic point for the entire Pacific presence of the United States military. These two areas, in the estimation of military planners, had to be protected. The need for a system to protect Alaska and Hawaii is acknowledged and we agree that these regions should be protected. We believe that this could be accomplished in a more open and honest way, particularly when it affects our allies and the American public.

What is interesting is that the billions spent on Star Wars systems, which these became known as, were only for "research," according to the military's mission statements. The technology is being advanced in the hope that a system might be developed early in the next century. The external threats are now being characterized as "rogue states and terrorist organizations" which might gain nuclear weapon delivery technologies. While the threats are not imagined and need to be addressed, it is not responsible to create word games which end public debate and allow systems

21. Fox, Adrienne. "Star wars: Force Not With Us, US Remains Defenseless Against Missile Attack." Investor's Business Daily, Aug. 25, 1997. EPI150

thought to be discontinued the latitude to proceed.

In another "offshoot of the Reagan administration's Strategic Defense Initiative" satellite-disabling lasers have been developed. A test, at less than full power, was performed at the end of 1997 to demonstrate the ability of the system to hit its target. The demonstration was a success and now many are concerned that this may provoke an arms race in space."22

What has become clear is that what the United States says to its citizens, friends and adversaries tends to be variations of the same misinformation and manipulations of the facts.

HAARP

This is where our story began. HAARP - The High Frequency Active Auroral Research Program is a joint project of the United States Air Force and Navy, based in Alaska. The project is a research program designed to study the ionosphere in order to develop new weapons technology.

The HAARP system is designed to manipulate the ionosphere, a layer which begins about thirty miles above the earth. The transmitter or HAARP device on the ground is a phased array antenna system - a large field of antennas designed to work together in focusing radio-frequency energy for manipulating the ionosphere. The radio frequency energy can be pulsed, shaped, and altered in ways never possible with other transmitters or at the power levels of this new facility.

The device will have an effective-radiated-power of 1 billion watts when completed in the first phase of the project. It will be used for "earth penetrating tomography" (looking through layers of the earth to locate underground facilities or minerals), communications with submarines, to manipulate communication of others, over-the-horizon radar, energy transfers from one part of the world to another, creating artificial plasma (energy) layers or patches in the ionosphere, to alter weather and may be used as an anti-satellite weapon. The story of HAARP and its related technology is a part of the puzzle of a "Revolution in Military Affairs" being pursued by the United States government, but it is only a small part.

"Millions of dollars have gone to Alaska universities to harness the power of the aurora borealis, the electrical energy shimmering in the northern skies... The earmarks also financed, among other things, 'a supercomputer north of the Arctic Circle' without naming the University of Alaska. Fairbanks as the beneficiary."23 Early on in the HAARP project there was confusion about "harnessing the energy of the aurora" (the northern lights) for use by the military. The real use appears to be for over-the-horizon effects, communications and ABM defense-related research. The University of Alaska again is the recipient of a supercomputer for "academic" research. The reality once again is that the University is being used to conduct military experiments for advanced weapon systems without full public disclosure or debate.

The above updated material is quoted from the book Earth Rising - The Revolution: Toward a Thousand Years of Peace by Dr. Nick Begich and James Roderick

22. Richter, Paul, "Army laser zaps satellite." Anchorage Daily News, Oct. 21, 1997. EPI426
23. Weiner, Tim. "Universities tap Congress' deep pockets." Anchorage Daily News, Aug. 24, 1999. EPI563

Immediate Release

Dr. Nick Begich founder of Earthpulse Press and co-author of Angel's Don't Play This HAARP and Earth Rising the Revolution, delivered a lecture on Arctic issues and HAARP in Brussels in the European Parliament on May 5-7, 1997 at the 12th General Assembly Globe International. In attendance were several members of the Russian Duma including Vitaliy Sevastyanov one of the delegates listed below. Dr. Begich's book, an expose' published in September 1996, launched the international investigation into the issues surrounding HAARP.

US HAARP Weapon Development Concerns Russian Duma
Interfax News Agency - August 9, 2002

"MOSCOW (Interfax) - The Russian State Duma has expressed concern about the USA's programme to develop a qualitatively new type of weapon.

"Under the High Frequency Active Auroral Research Programme (HAARP) [website address: http://server5550.itd.nrl.navy.mil/projects/haarp/], the USA is creating new integral geophysical weapons that may influence the near-Earth medium with high-frequency radio waves," the State Duma said in an appeal circulated on Thursday [8 August].

"The significance of this qualitative leap could be compared to the transition from cold steel to firearms, or from conventional weapons to nuclear weapons. This new type of weapons differs from previous types in that the near-Earth medium becomes at once an object of direct influence and its component.

These conclusions were made by the commission of the State Duma's international affairs and defence committees, the statement reads: The committees reported that the USA is planning to test three facilities of this kind. One of them is located on the military testing ground in Alaska and its full-scale tests are to begin in early 2003. The second one is in Greenland and the third one in Norway.

"When these facilities are launched into space from Norway, Alaska and Greenland, a closed contour will be created with a truly fantastic integral potential for influencing the near-Earth medium," the State Duma said.

The USA plans to carry out large-scale scientific experiments tinder the HAARP programme, and not controlled by the global community, will create weapons capable of breaking radio communication lines and equipment installed on spaceships and rockets, provoke serious accidents in electricity networks and in oil and gas pipelines and have a negative impact on the mental health of people populating entire regions, the deputies said.

They demanded that an international ban be put on such large-scale geophysical experiments.

The appeal, signed by 90 deputies, has been sent to President Vladimir Putin, to the UN and other international organizations, to the parliaments and leaders of the UN member countries, to the scientific public and to mass media outlets.

Among those who signed the appeal are Tatyana Astrakhankina, Nikolay Kharitonov, Yegor Ligachev, Sergey Reshulskiy, Vitaliy Sevastyanov, Viktor Cherepkov, Valentin Zorkaltsev and Aleksey Mitrofanov."

INTRODUCTION

Raising the Roof of the World

A four-year old child in his sandbox looks up at a blue sky with his eyes full of trust. His mother places a straw hat on his head, dabs sun blocking cream on his freckled nose, and expects that, because she shielded him from the sun's ultraviolet rays, he is safe from harmful radiations. But is he? Both his body and his planet are being penetrated by an unprecedented mix of man-caused radiations, and now the U.S. military plans to stir up the mix even further. They could go too far this time.

This book is about people who search for the truth about the Pentagon's project that is quietly being built at a remote outpost in Alaska. The $30 million project euphemistically named HAARP (High frequency Active Auroral Research Program) is made to beam more than 1.7 gigawatts (billion watts) of radiated power into the ionosphere - the electrically-charged layer above Earth's atmosphere.

Put simply, the apparatus is a reversal of a radio telescope - just transmitting instead of receiving. It will "boil the upper atmosphere".24 After disturbing the ionosphere, the radiations will bounce back onto the earth in the form of long waves which penetrate our bodies, the ground and the oceans.

Could the invasion of radiations damage plants and animal life on the ground? One technician/researcher told National Public Radio affiliate KCHU, "I can hardly find an expert who knows anything about this, because they're all working for the government. Or working for a university which by proxy is for the government, because they're funded either through (defense subcontracts) contracts or through grants from the Department of Defense."

"Working for the government" can certainly be an honorable position. But in the case of science, it gets in the way of objectivity and courage to explore. Throughout this century, scientists are increasingly hesitant to investigate freely outside their specialty. They are all too aware that the military/industrial/academic complex decides who gets the lucrative grant, consultancy or academic position. However, there are independent experts such as those who looked into HAARP. They speak out in the pages of this book.

These researchers learned that HAARP represents a technology which could lead to a new class of weapons that could change our world profoundly - an all-purpose military tool. If misused, the tool could mess up the weather. It could be used against humanity in a way that would change what people think, believe and feel. It could be used for good or evil, just as a harp can produce the music of Mozart or the melody of a death march.

24 Electronics tecnnician Eric Nashlund describing HAARP for National Public Radio, KCHU Apr. 27, 1994.

Many technological "notes" could be played by HAARP-type military experiments. They can:

* manipulate global weather;

* hurt ecosystems;

* knock out electronic communications; or

* change our moods and mental states.

That last item will surprise researchers who have been looking only at the possible environmental effects of HAARP-type technologies. However, the authors believe that no sane person wants to be manipulated into artificially-induced moods or actions, and that these possibilities are real. As you will see in the research cited in this book, U.S. decisionmakers for the first time are proposing to mix military and civilian police resources, under the banner of "non-lethal" weaponry for crowd control and other purposes.

This book looks at what can be done with modulated radio frequencies - the stuff of the HAARP experiments - and what environmental effects the experiments could trigger.

The intent of this book is to call for a moratorium on use of the super powerful ionospheric heaters until independent scientists and other nonmilitary decisionmakers can have an educated look at what the experimenters could do. To put it simply, no one is supervising the big boys who have the big toys and the fat black wallets.

Despite the end of the Cold War, their allowances are still enviable. Even with some cutbacks to their spending, the military gets more than other sectors, For example, the Clinton administration as of May 1995 planned to spend at least $15 billion on "theater defense missile" systems in the next seven years.25 We contend that it's time for the public to take a closer look at how such money is used. It is being used to raise the roof of the world.

The authors' purpose is not to scare you, but instead to inform you on under-reported crucial issues, and to provide sources for more information. HAARP has been misrepresented by both the military/contractors and by its opponents. It's time to open up the debate to bring in an informed public, In these pages you will meet some of the people, from the Alaskan bush to a Princeton science laboratory, who courageously dug into the topic and, in the process, mobilized many other people.

25 Pilita Clark, "Australia, 05 Missile Deal for Star Wars II", Sydney Morning Herald, May 19, 1995.

"This project has nothing to do with musical instruments or the natural aurora."
Clare Zickuhr, former accountant for ARCO, and HAARP researcher.

PART ONE

The People Wake Up To HAARP

"Tesla appeared as a real-life sorcerer, depicting...the ability to tame mysterious natural phenomena to the will of the human species." Marc J.Seifer, Ph.D.

Chapter One

THE SORCERERS APPRENTICES

Lightning flickered and thunder crashed through the mountain air as if cued up to open the International Tesla Society's July 1986 symposium. A woman admired the jagged streaks of light as she walked from downtown Colorado Springs to the College of the Canyon.

The display of light and sound seemed to have a life of its own, and triggered thoughts ahout Earth's life-protecting layers. The layers appear immensely deep to a human looking up from a sidewalk. But the few hundred miles of depth of the atmospheric layers are, to the planet, as a film of paint is to a student's desk globe.26 Unlike layers of paint, however, the atmospheric veils swirl and flow and interact.

She found comfort in thinking that surely no one could tame Earth's dynamic atmosphere. Granted, nature is under siege elsewhere. Engineers straighten undulating wild rivers and slap them into concrete flood-control channels. They shave Earth's forests and drain unruly tidal marshes. But who is arrogant enough to say that they own the sky?

After a brief downpour, the storm curtain opened to an electric blue sky, and the air sparkled with vitality. "No wonder Tesla did his most dramatic experiments here," Jeane Manning thought.

As a freelance journalist, she was in Colorado to learn more about the work of some maverick engineers and their hero, the electrical genius Nikola Tesla. In her research into non-conventional energy technologies, she had encountered more than a few books about Tesla, and thought it strange that mainstream textbooks ignore such a historical figure. In the nineteenth century he patented the alternating current (AC) system now used to generate and send electrical power to every home along this avenue, every building on the campus ahead and factories all over the world. His genius did not stop there, however, and before he died in 1943 he had discovered more radical inventions - apparently more than the tycoons of the early years of the twentieth century wanted to see developed.

Manning was curious about the stories. Did Tesla really send electricity more than twenty miles without wires? There was also the legend that Tesla invented a "space energy receiver" and powered a Pierce-Arrow car in a demonstration of the receiver. Yet he died penniless in 1943.

She expected this conference would give a broader picture of Tesla than her impression of a would-be God of Lightning, a view that came from seeing photographs of Tesla with bolts of light streaming from his fingertips. In front of

26 Hans J. Lugt. Vortex Flow in Nature and Technology, p. 150, John Wiley and Sons, NY 1978.

audiences of New York's cultural elite in his laboratory, he had allowed hundreds of thousands of volts to pass over his body and light up lamps, melt metal and explode small light bulbs. It was a don't try this at home scene, with the sLender inventor sprayed with crackling electrical current as he stood stork like on insulated shoes. Manning was fascinated at the thought of the elegant Tesla showing off for his cultured friends, in his laboratory lit with dazzling, pulsating waves of light in unearthly warm hues.27, 28

In the college where the conference was held, she picked up a press pass, then joined two hundred or so spectators in Armstrong auditorium. Onstage, man-made lightning sizzled through the air, zig-zagging from a giant electrical device called a Tesla coil which dwarfed three technicians. Blue light streaked along the paths of fried air and members of the audience covered their ears against the deafening electric buzz.

It looked lethal, but the demonstrator explained that although Tesla used high voltage (electrical pressure) current, it was of such a high-frequency that it danced over his skin instead of zapping his internal organs. A man sat on top of the apparatus before the coil was turned on with a deafening roar, then long sparks jumped from his fingers.

In other meeting rooms, would-be Gods of Lightning told about their research. One of those speakers was Robert Golka, a sturdily built man with the cocky personality of a lone adventurer. He prided himself on making fireballs by whatever means - even from a circuit breaker in a railroad engine when he had slammed the engine into reverse. A fireball, or ball lightning, is a glowing sphere of what looks like gases. The speaker said that Nikola Tesla's "wireless power" experiments near Colorado Springs made 30 second golfball-sized ball lightning in 1899.

Why would anyone want to play with lightning, in any shape? Golka was explaining; ball lightning might hold the secrets of thermonuclear fusion and eventually cheap power. He had rented an empty hangar in Wendover, Utah - the hangar where the atomic bomb was loaded into a bomber for its death-drop debut - and built a Tesla coil that was 51 feet wide for experiments. Golka spoke of voltages of 15 million volts and lightning-like discharges forty feet long. He hinted that the technology could be used as an "ultra-high megavolt source for particle beam weaponry".

Manning wondered what the engineer on stage really wanted to do - send electrical energy without wires or get a grant from the military. Or both. As if in answer to her question, Golka began to talk about wireless power transmission. Nikola Tesla had claimed to be able to send electrical energy without wires before the turn of the century, and he envisioned people all around the globe sticking rods into the earth to extract that energy - free. He didn't get to send power to the people, however. After Tesla admitted to financier J.P. Morgan that an experimental tower on Long Island was meant to send power as well as messages, his public career ended.

27 Hesearch by Dr. Marc J. Seifer, p. 1-33, Proceedings of 1988 International Teste Symposium, available from International Tesla Society, PO Box 5636, Colorado Springs, CO 80931.
28 SUPPRESSED INVENTIONS, edited by Jon Eisen, Auckland Institute of Technology Press1994.

Although he continued to invent and to learn, he was kicked out of the spotlight. Corporate moguls who were interested in creating monopolies and metering electrical power blackballed him.

Golka spoke about his own "Project Tesla", which involved building a 122-foot resonating tower high in the mountains. Manning struggled to understand what he meant by his efforts to get "earth resonance". She could visualize the more familiar resonance in musical instruments, and that helped to picture the earth vibrating as if its note was struck, If someone strikes a piano key of the same pitch as a string on her violin nearby, for example, the string will vibrate. The pitch of a note comes from how many times per second the sound vibrates. Similarly, the earth may have a resonant frequency; if electrical oscillations pound through the earth at a certain rate for a long enough time, the small periodic input may build up to a large vibration. Could Tesla's knowledge about resonance really be used for advanced technologies?

"We're losing to the Japanese," Golka insisted. "We have the technology and we're sleeping on it,"

Another short, lively speaker, an engineering professor, said there is "definite evidence that Nikola Tesla did excite the Schumann cavity in 1899". (This cavity is the area between the earth and the electrically- charged ionosphere.)

A man from Albuquerque, New Mexico, brought the talk down to earth again with a demonstration of a squat piece of equipment called The Tesla Earthquake Oscillator. Stroking his beard - a trim gray goatee - he assured onlookers that the oscillator would not be coupled to the earth during the demonstration and therefore would not cause any earthquakes. The mechanical device had a frictionless piston in a heavy casing. "This oscillator pounds the earth and impresses on it rhythmic vibrations of certain controllable frequencies," he said. The sound vibrations would bounce back and forth "in a reflection pattern which produces standing wave overlappings, or nodes, which act as lenses to propagate waves which set up a resonance condition."

There was that word "resonance" again. The electrical engineers talked about a buildup of ever more powerful effects. Manning may have had a puzzled expression on her face, because one man turned to her and offered to further explain resonance. He gave the example of a child pushing a larger person on a swing. Small pushes, correctly timed, gradually increase the distance through which the swing speeds. In other words, small input at regular intervals can produce big effects. Resonance would turn out to be an important concept, used deliberately or inadvertently by men who try to tame the sky and in the process accidentally interfere with our weather, health and minds. But Manning wouldn't encounter the skybusters until five years later.

In another meeting room, a graduate student from Montana State University, Kyle Klicker, talked about the hypothesis of William Hooper, who gave new twists on magnetic theory. In the early 1970's, Hooper had been showing that not all

electrical fields are the same. What he called a "motional electric field" was different from the well-known electrostatic fields; the motional electric field results in a force that passes through lead. In other words, the field is unshieldable.

Electricity of a different quality? Manning wasn't ready for that; she was still studying beginner-level books about standard electricity whenever she went to a library. Over the previous few years she had realized that there was a shortage of journalists looking into this scene. Engineering lectures were a long way from her university training as a social-worker and job experience as a reporter, but she would look back on this 1986 conference, and more than a dozen other energy conferences to follow, as an introduction to the scene. They introduced her to the fast growing field of study called "non-conventional energy technologies". Even the William Hooper patent would turn up in her life again later, quoted in a "skybuster" document that would frighten some otherwise- unflappable scientists.

In the 1986 meeting, however, she tried to narrow down what she was learning in order to make sense of it. History; she could easily grasp history. Next on the Tesla program was a man with a craggy face and the erect posture of a military officer. Dr. Bill Jones of Los Angeles was a physicist, retired naval officer and former Top Gun pilot, who spoke about Nikola Testa's place in history. Fortunately, Jones ran through his talk at a much slower pace than the Mach 2 speed at which he had flown fighter planes. This physicist made it clear that he wanted Tesla reinstated in a place of honor in history. For example, Jones said, Guglielmo Marconi got recognition for radio, but Tesla had demonstrated a remote-control boat in Madison Square Gardens several years before Marconi's announcement. Dr. Jones also told about incidents such as the time in 1911 when Tesla described how radar could work. Tesla was too far ahead of his time to be heard. Six years later Tesla had offered his invention of a particle-beam weapon to the U.S. Department of War, and was laughed out of the war office. Again, he was too early in the century to be believed.

With a reporter's habit of taking notes, Manning penned the speaker's words in a notebook. "What do we really know about magnetism?....What do we really know about electrostatics?"

Dr. Jones talked about something described as "force potential manifested by stress, and not necessarily in the presence of mass." Some researchers looked at this force potential as being "scalar electromechanics". Mainstream scientists are reluctant to accept these new and revolutionary ideas, Dr. Jones said, but the ideas hold promise for clean energy technology.

On the last day of the conference as people flowed out of the auditorium, the crowd eddied around a man of wiry build, probably in his late thirties, who was speaking in an abrupt insistent voice that could be heard at the end of the hall.

"I object to this deliberate build-up of a cult around Tesla - referring to things he never invented, never said, as Tesla science'!"

The agitator was having a negative effect on the men arguing with him about power-beaming inventions. He appeared to feed on their annoyance. Later in the afternoon Manning again wandered out of the meeting hall for a mid-lecture break, head throbbing with new concepts. The same loud-voiced man, whom we will call Gregory Jones, was talking to another man and the two drew her into conversation. Gregory had the bouncy energy of someone who was looking for a quick laugh as well as an argument. Asked why he insults Nikola Tesla at a Tesla symposium, he replied, "I like deflating idols."

This iconoclast was a full-time researcher regarding what he said is a subtle, powerful but little-known dynamic energy which resides in the atmosphere and nearly everywhere. He said a number of experiments have proven that a dynamic non-material energy exists in all living forms.

Manning had enough of wild concepts for one day. However, at a gut level she felt that it was true. Living people, animals, plants and even the atmosphere seemed to exude some type of electricity or vitality when in a healthy state and when free from the effects of pollution. Was it possible that official science really doesn't know much about something so basic, because the measuring instruments hadn't yet been invented to detect it?

Gregory was saying that the coarse form of electricity used in nineteenfh- and twentieth-century technologies is an irritant to the primal form of energy in the air. According to that worldview, if Tesla had been able to send electricity wirelessly all over the world, it would have been an ecological disaster.

"Humans. My least-favorite species!" Gregory bellowed, following the embarrassed journalist toward the door to the meeting hall. "Listen to this. I just about got myself kicked out of the meeting. I went up to the speaker; you heard his talk?"

The electrical engineering professor with a Ph.D. that Gregory mentioned had seemed highly respected by the audience. The scientist had done much experimenting toward the goal of repeating Tesla's wireless electricity experiments. He had talked about wanting to "resonate the Schumann cavity". But Gregory was no respecter of academic degrees; he apparently had caused another commotion in the hallway by confronting this professor. "1 told him that if he tried to be another Tesla, he could cause the biggest ecological disaster we've ever had."

In Gregory's view, it was fortunate for the planet that Tesla's tower on Long Island - intended to broadcast power around the earth - was never completed. After the banker J .P. Morgan withdrew funding, no other financier would touch the project. It was just as well; the project would have been insane, Gregory insisted. Whether they send their electrical power through the air or through the earth, he said, these experimenters would be playing with our planet on a big scale.

"So what did the professor say?"

"He said 'well, we'll just have to try it and find out'."

Hearing this, Manning stood in silence. Gregory's concern for his planet's natural systems felt sincere. He asked for her business card. To her surprise, he would telephone her occasionally for about six years, and he would turn out to be ferociously intelligent, and the most relentless information-seeker she would meet in the coming years of travels to conferences of inventors and other energy researchers. She was careful to pass on to him only non-confidential information from published sources, never fully trusting Gregory because of his extremism. But she did appreciate the long-distance calls over the next few years to educate her about what he called "mad science".

"If Tesla's resonance effects, as shown by the Stanford team, can control enormous energies by minuscule triggering signals, then...with Godlike arrogance, we someday may yet direct the stars in their courses. "29

Frederic Jueneman, 1974.

Chapter Two

TRAIL FROM TESLA TO STAR WARS

After she returned home to Vancouver, Canada, Manning reported to a new friend who wanted to hear about the Tesla conference. He was John Hutchison, an inventor who had discovered an anomalous "anti-gravity" effect some years earlier while he had been restoring antique electrical equipment and building Tesla coils. During the previous years, unofficial delegations from Canadian and United States military groups had visited his laboratory to see the "Hutchison effect". Now he was working alone; the visitors had apparently learned all that they came to learn. His requests for copies of the videos they filmed in his laboratory were met with "sorry; we destroyed all those videos because there wasn't anything on them." He didn't believe it.

John Hutchison told Manning some of the amusing twists of his search for reports about his experiments. "I was phoning the Pentagon and asking for 'John South', because I was told that was the name of one of the guys who were here in my lab. By chance a secretary put me through to the man 1 described, and it turns out his name was Col. John Alexander."

The name would come up again more than five years later, as Manning gradually found out what else could be done with "Tesla technology" - so-called nonlethal weaponry. John Hutchison described Col. Alexander as a handsome, personable man who was a fun guy to be around throughout the days of the "anti-gravity" experiments in the "Vancouver laboratory.

Hutchison had leisure time to chat with Manning in a now-silent laboratory. He shared Tesla lore about beamed weaponry, and told her that the Soviet Union was mysteriously experimenting with radio-frequency signals, beaming them toward North America. Beginning in late 1976 he had been one of many ham radio operators who began picking up the 10-Hertz (cycles, "beats" or pulses per second) frequencies on radio receivers. Hams called these signals "the Soviets' Woodpecker" because of the sharp tapping they heard from the extremely low frequency (ELF) waves. Some researchers speculated that the Woodpecker signal was a Tesla-type weapon for mind control, because the ELF was at a frequency which could resonate with neurons in the human brain, and the transmission could be a carrier wave that was modulated (varied in amplitude, frequency or phase) to carry a hidden effect.

"Spoo-kyyy," she joked, dismissing what seemed to be a paranoid speculation,

29 Frederic Jueneman, "Innovative Notebook", Industrial Research magazine, February 1974.

Manning learned more about Nikola Testa two years later, after another symposium in Colorado Springs. One of the papers in the proceedings of that meeting was by a historian and psychology professor, Dr. Marc Seifer. She would recall it years later when learning about unpublicized experiments in lighting up the upper atmosphere.

Seifer gave Tesla credit for inventing fluorescent lights, just as the revered American inventor Thomas Edison is the inventor of the incandescent light bulb. The biographer notes that Tesla and Edison clashed over Edison's insistence that the country should stick to his direct current (DC) technologies for electrical lighting and power distribution. Tesla's AC system was better because AC electricity can travel hundreds of miles over power lines at high voltages, while a wire carrying DC would be unable to light bulbs a mile away from the generating plant.

Strangely, Edison was the one who was lionized in American history books. One of the stories that is told and retold, for example, is how he sent men to the Amazon to look for materials for the best filament for his light bulb. Edison's persistence is highly praised. However, most people today are unaware that Tesla's demonstrations showed the filament to be superfluous - not needed for electric lights. Using very high-frequencies (increased vibrations of the electrical current), he showed that the action of the air was more important than the filament. And thus he out-'Edisoned' Edison, said Dr. Seifer.

Seifer pulled together parts from 53 reference works, in his presentation "Nikola Tesla: The History of Lasers and Particle Beam Weapons".30 For an example of Tesla research, two brothers, both scientists, traveled to the Tesla Museum in Yugoslavia and read materials not available in North America. They suggested that Testa's particle-beam work evolved from his pioneering experiments with X-rays, as well as from his idea of lighting up the skies with his "magnifying transmitter" by beaming up electrical energy to the stratosphere (a level of the atmosphere above the clouds - about seven to thirty-one miles above the ground).

"That would be some light-up display!" Manning thought as she read the article. However, she wondered about the wisdom of treating the upper atmosphere as if it were merely gases in a giant fluorescent bulb.

She winced as she read a list of military uses for Tesla's many inventions: earthquake contrivances, world radar, particle beam weapons and brain wave manipulation. "One or more magnifying transmitters could theoretically send destructive impulses through the earth to any location," said Seifer. "For instance, a well-placed jolt of many millions of volts could theoretically destroy the communications network of any major city."

30 Dr. Marc J. Seifer, "Nikola Tesla: The History of Lasers and Particle Beam Weapons", Proceedings of 1988 International Tesla Symposium.

Seifer had been intrigued by issues that emerged from his investigation:

- Particle beam weaponry was such a high-level secret that President Jimmy Carter, for example, "was screened from vital technical developments by the bureaucracy of the CIA and Defense Intelligence Agency" (according to General George Keegan, former head of Air Force Intelligence);

- Wright-Patterson Air Force base in Dayton, Ohio, was mentioned, in regard to the air force base's use of bright young geniuses to attempt a breakthrough
in Tesla technology.

Based on FBI files as well as other literature, Seifer concluded, "Great support is lent to the hypothesis that Tesla's work and papers were systematically hidden from public view in order to protect the trail of this top secret work, which today is known as Star Wars."

It was a paradox, Nikola Tesla's name was indeed invoked when describing proposed technologies that are as potentially planet- cleansing as "free energy" - non-polluting power generation. At the same time he was credited with inventing weapons which could be used for the Strategic Defense Initiative (S.D.I., popularly known as Star Wars). And his "wireless power" engineering experiments may have led to a disaster in Siberia, Manning later learned from scientist Oliver Nichelson. Tesla's love of nature seemed to be a contradiction to his desire to arrogantly manipulate it - to light up the sky. Over the next nine years, she had occasions to think about the deep frustration in Gregory's eyes at the Tesla conference as he described the professor's attitude of "We'll just have to try it, and find out."

Meanwhile one would-be god of the elements wasn't pulling any punches. A Texan, Dr. Bernard Eastlund, aimed his sights high -up to the ionosphere, In 1990 Gregory sent Manning a copy of a 1987 patent which cited Nikola Tesla under the heading "prior art". He suggested she send for the audiotape of a National Public Radio interview with Eastlund.

Manning was astonished when she read the patent, titled "A Method and Apparatus for Altering a Region of the Earth's Atmosphere, Ionosphere and Magnetosphere". Whichever way she looked at it, the proposed high-power beaming of radio frequency energy into the upper atmosphere sounded insane. For example, the patent said the technology could manipulate global weather systems. Gregory had been sending her articles which indicated that electric forces do affect the weather, so it came as no surprise.

More horrifying, she remembered what a brilliant physicist by the name of Walter Richmond had written about a possible technology which sounded very much like Eastlund's concept. The late Walter Richmond and anthropologist Leigh Richmond wrote a book titled The Lost Millennium, using the novel format to get their ideas out to the world A disastrous technology described as a "solar tap" in the book was startlingly similar to aspects of Eastlund's patent.31

31 Walter and Leigh Richmond. The Lost Millennium. Interdimensional Sciences Inc., Lakemont, Georgia 1967.

Although ionospheric heaters beam power from antennae on the ground up to the ionosphere, and the Richmonds' "solar tap"concept goes the other direction, both involve connecting the earth with the ionosphere. The novel described a solar tap that just wouldn't quit. It began from a technology that started on the ground, from which engineers beamed up a pathway for some of the ionospheric electricity to ride back down on. This planetary short-circuit usually blew out in a fraction of a second, but one day the fictional engineers made a fatal mistake. They kept a solar tap going while a solar flare surged into the ionosphere and then to the ground via the ionized pathway of the tap beam.

"And the surge of power from the tap became an avalanche. An avalanche at the pole in the vertical plane of the planet's magnetic field where the winds of magnetism would not rise to blow it out. One trillion watt-seconds of energy unleashed their fury on the polar cap in the first flash...Even as it discharged, the ionosphere was recharged from the solar furnace. The first flash became a mighty roar that poured an increased and now steady stream...of energy through the now-stabilized short circuit. Kilocubit after square kilocubit of frozen wasteland boiled. Watt after watt of ever-increasing avalanche energy lit the polar cap with a glare that had never before been seen..."

Could such a disaster happen in real life? Manning reread the introduction to The Lost Millennium. It said that in 1962 Walter Richmond was researching atmospheric electricity and developed the theory of what the couple called the solar tap - a source of abundant power from the electrical current that exists as a "potential" between the ground and the ionosphere. "The physics is exact. The power is there for the tapping".

Such massive amounts of power would be distributed by broadcasting it, "which Nikola Tesla had proven could be done, before 1911". The two scientists believed that automobiles, industries and homes could be tuned into broadcast power, just as radios are tuned to certain frequencies. The bad news was that unless carefully handled, broadcast power would resonate with the structural steel of buildings in a destructive way, Richmond said.

Manning's attention was caught by the scientists' own life story. In 1963 the Richmonds' took their research papers on the solar tap to then-President John F. Kennedy's science advisor. They planned to also take them to the United Nations Science Advisory Committee. Instead they received a shock from their government.

"Our papers were placed under the Secrecy label (Secrecy Act legislation) and we were offered a government contract for research, which we refused. It would have placed us under the Secrecy Syndrome, in which we had refused for some years to take part, Leigh wrote. We were told to sit down and shut up, in no uncertain terms."

The vision of the fictional solar tap lingered in Manning's mind. The book described an experiment-gone-wrong that started an unquenchable avalanche of electrons. A character in the book said "the power's there. Enough to blow up the Earth if it's misused."

Is this what the late Walter Richmond knew, that had to be placed under the Secrecy Act? If the electrical power of the ionosphere avalanched onto Earth in a continuous flow, his book's character said, it would

"burn hell out of the spot where it touched Earth Empty the capacitor that's the ionosphere, and feed directly from the solar wind. Earth's an electrical motor...When the motor began to run wild, it would increase its rotational speed...Eventually the Earth would explode from increased centrifugal stress."

Manning read the novel's description of the fiery, steamy noisy destruction of a planet. "A shock wave, racing at the speed of sound...toppling great cities..." Destruction continued for days, and the planet "whipped about on its axis like a thing tortured." The Richmonds' novel vividly raised questions about the wisdom of pulsing
a radio-frequency beam which could make an ionized (and therefore electrically-conducting) channel between earth and the ionosphere.

Even if there were no danger of accidentally tapping into the ionospheric powerhouse and getting zapped in return, disrupting a part of the upper atmosphere violently is in itself a dangerous experiment, she later was told by independent scientists.32 Ionospheric heaters were nothing new, Manning had learned from articles sent her from Gregory. However, Eastlund's invention made it possible to stab the ionosphere with a much more powerful and more focused beam.

A few years later Gregory telephoned and said in a choked voice, "The maniacs are actually going to do it. In Alaska."

The U.S. Navy and Air Force would be paying a contractor, Arco Power Technologies Inc., to build a super-powerful ionospheric heater - an array of antennae - in the Alaskan bush outside of Anchorage. Over the next year Gregory mailed her articles, on ionospheric heaters and related topics, which he found in science journals dating back to the 1970's. He gave her the phone number for a man named Clare Zickuhr in Anchorage. Gregory became increasingly angry and pessimistic about the state of his planet's health, and eventually sent his entire file on ionospheric heaters to her. "I give up. I've written to everyone I could think of. You're a journalist; do something with this."

His words and the thought of what he called "mad science in our sky" weighed on her, but she was again employed as a reporter for a daily newspaper in a British Columbia city and had no time for starting any campaign. One day she photocopied excerpts from the file, wrote an introductory page, and gave the packet to the managing editor at the newspaper. He sent it to the newspaper chain's columnist in Ottawa, but the man never published a word about ionospheric experiments.

In early 1994 she telephoned a reporter at the Anchorage paper; Gregory had said the man was writing an article about the project that would beam so much power up to the ionosphere for military experiments. In a discouraged tone of voice the

32 Dr. Richard Williams, Physics and Society and interview with Adam Trombly, physicist.

reporter said that his editor was not interested in art investigative story of any depth about the project; the stance of the paper was that the military's infusion of money would provide jobs. Manning photocopied her now-thick file on the topic of ionospheric heaters and electric weather forces and sent it to the reporter anyway.

Her next call was to Clare Zickuhr. A year later, she would be in Alaska interviewing him and others who were concerned about the "skybuster", as Dr. Richard Williams of Princeton had named the proposed super-powerful ionospheric heater. The sequence of events that took her to Anchorage began when Dennis Specht, an anti-nuclear activist then living in Alaska, sent a news item to an Australian magazine.

"(HAARP) should be carefully studied by large groups of independent scientists..."
Dr. Patrick Flanagan

Chapter Three

WHAT'S GOING ON UP THERE?

Nick Begich can't be categorized by his long ponytail and youthful appearance; he started his first business in 1974 at the age of 16 and has worked in mining, construction, real estate and, more recently, a mid-level managerial job in the Anchorage School District.

Service in Alaskan politics and labor union organizing brought him public service awards, a couple of appointments to the Alaska Council for Economic Education and two terms as president of the Alaska Federation of Teachers (AFT). But it was his longtime interest in science that earned Begich the informal title of "evolving eclectic".

His life took another turn when he happened to be thumbing through the April 1994 issue of an Australian magazine that Patrick Flanagan suggested he check out, when the name of Nick's hometown newspaper caught his eye. "Odd that Nexus would print an item from the Anchorage Daily News," he commented to his wife Shelah.

The contents of the news brief startled them - the federal government was about to introduce some weird technology right in their backyard, figuratively speaking. Nick copied the reference and headed to the Anchorage municipal library to search out the original story, a November 20, 1994 letter to Anchorage Daily News from Eric Nashlund. It told about a military-funded project called HAARP - High-frequency Active Auroral Research Program - intended to "perturb" the ionosphere for Department of Defense experiments.

Nashlund's letter said:

"Some startling revelations came to light while researching the background of a military-sponsored project starting construction in Gakona...HAARP will be used to understand, stimulate and control ionospheric processes that might alter the performance of communications and surveillance systems, according to a HAARP fact sheet. The HAARP environmental impact statement claims negligible ionospheric impact, with no impact to climate, weather or ozone layer.

"An ARCO company has the bid for construction of HAARP: ARCO Power Technologies Inc. APTI holds a patent (# 4,686,605, "Method and Apparatus for Altering a Region in the Earth's Atmosphere, Ionosphere, and/or Magnetosphere", inventor: Bernard J. Eastlund; assignee: APTI Inc., Los Angeles) which matches closely the HAARP proposal dealing with transmitting extremely large amounts of

radio-frequency energy into the ionosphere. It is evident that HAARP will at least test, if not fully implement, the patent capabilities.

"Patent #4,686,605 claims it has the following uses: 'cause...total disruption of communications over a very large portion of the Earth...disrupting not only land-based communications, but also airborne communications and sea communications (both surface and subsurface)...missile or aircraft destruction, deflection or confusion... weather modification...by altering solar absorption...ozone, nitrogen etc. concentrations could be artificially increased..."

Whether or not APTI was using that particular patent for HAARP, Begich questioned the wisdom of the whole effort, "If this technology works, is it in humanity's interest for a secretive bureaucracy to control something which could stop all electronic communications or change the planet's weather patterns?"

The library had the patent on microfiche. Its abstract (summary) read:

"A method and apparatus for altering at least one selected region which normally exists above the earth's surface. The region is excited by electron cyclotron resonance heating to thereby increase its charged particle density. In one embodiment, circularly-polarized electromagnetic radiation is transmitted upward in a direction substantially parallel to and along a field line which extends through the region of plasma to be altered. The radiation is transmitted at a frequency which excites electron cyclotron resonance to heat and accelerate the charged particles. This increase in energy can cause ionization of neutral particles which are then absorbed as part of the region, thereby increasing the charged particle density of the region."

When Begich examined the patent's section titled "prior art", he was surprised to see references to articles about Nikola Tesla. Eastlund's drawings did appear similar to patents issued to Nikola Tesla in the late 19th and early 20th century!

Tesla's name had been associated with wild schemes, and Begich wanted to find out why would-be planetary engineers were still quoting the deceased inventor. Begich knew that Tesla was credited with startling an earthquake, generating "balls of electromagnetic energy" and other wonders. Toward the end of his life Tesla had claimed to hold the keys to creating a shield in the upper atmosphere that would destroy any incoming aircraft.

A cold chill ran through Begich after he read the articles cited. The first was the New York Times of December 8, 1915:

"Nikola Tesla, the inventor, has filed patent applications on the essential parts of a machine, possibilities which test a layman's imagination and promise a parallel of Thor's shooting thunderbolts from the sky to punish those who had angered the gods...Suffice it to say that the invention will go through space with a speed of 300 miles a second, a manless ship without propelling engine or wings sent, by electricity to any desired point on the globe on its errand of destruction, if destruction its manipulator wishes to effect. '

It is not a time, said Dr. Tesla yesterday, 'to go into the details of this thing. It is founded upon a principle that means great things in peace; it can be used for great things in war. But I repeat, this is no time to talk of such things.'

'It is perfectly practicable to transmit electrical energy without wires and produce destructive effects at a distance. 1 have already constructed a wireless transmitter which makes this possible, and have described it in my technical publications, among which 1 refer to my patent number 1,119,732 recently granted. With transmitters of this kind we are enabled to project electrical energy in any amount to any distance and apply it for innumerable purposes, both in war and peace, through the universal adoption of this system, ideal conditions for the maintenance of law and order will be realized, for then the energy necessary to the enforcement of right and justice will be normally productive, yet potential, and in any moment available, for attack and defense. The power transmitted need not be necessarily destructive, for, if distance is made to depend upon it, its withdrawal or supply will bring about the same results as those now accomplished by force of arms'

Begich noticed the next article referred to in the patent also ran in the New York Times, on September 22, 1940 and read:

"Nikola Tesla, one of the truly great inventors, who celebrated his eighty—ourth birthday on July 10, tells the writer that he stands ready to divulge to the United States government the secret of his 'teleforce', with which, he said, airplane motors would be melted at a distance of 250 miles, so that an invisible Chinese Wall of Defense would be built around the country..."

"This 'teleforce', he said, is based upon an entirely new principle of physics that 'no one has ever dreamed about', different from the principle embodied in his inventions relating to the transmission of electrical power from a distance, for which he has received a number of basic patents. This new type of force, Mr. Tesla said, would operate through a beam one one hundred-millionth of a square centimeter in diameter, and could be generated from a special plant that would cost no more than $2,000,000 and would take only about three months to construct."

"The beam, he states, involves four new inventions, two of which already have been tested. One of these is a method and apparatus for producing rays 'and other manifestations of energy' in free air, eliminating the necessity for a high vacuum; a second is a method and process for producing 'very great electrical force'; the third is a method for amplifying this force and the fourth is a new method for producing 'a tremendous electrical repelling force'. This would be the projector, or gun, of the system. The voltage for propelling the beam to its objective, according to the inventor, will attain a potential of 50,000,000 volts."

"With this enormous voltage, he said, microscopic electrical particles of matter will be catapulted on their mission of defensive destruction. He has been working on this invention, he added, for many years and has recently made a number of improvements in it."

There was a third reference, apparently written by Tesla, that Begich could not obtain. Tesla's ideas in these articles raised more questions in Begich's mind about the version of a "law and order" likely to rise from any military organization controlling such technology. He believed that if this technology were to be implemented anywhere, it should be done so openly and honestly, and only when it can be safe and worthwhile for improving the human condition. The idea of unleashing such power into the planet's ionosphere disturbed him deeply.

Begich made telephone calls, did more reading and heard the reaction of a few independent scientists to the military-funded project in the sky. Their request to the military could be stated bluntly as: "Back off, Charlie; this is our planet too."

There was another aspect that concerned him besides HAARP's possible effect on weather or on emergency communications in the Alaskan bush. Over the years he had seen impressive studies saying that even low power levels of pulsed radio frequency beaming could affect human physiology, minds and moods. He decided to find out more, much more, from reputable sources. It would be foolish to hit the alarm button about HAARP without being certain.

One concern was clearly speculative. One of the HAARP documents[33] stated that "Ionospheric disturbances have been detected and ascribed to earthquakes such as the Alaska earthquake on March 28, 1964," He wondered if the reverse might be true - if deliberate ionospheric disturbances could in turn resonate with the materials in the earth and trigger an earthquake.

The earthquake question was only one of the questions nagging at the independent researchers. Begich did not know it at the time, but the research would focus his energies in a way that would attract additional similar minded people. Eventually their directed energies would "perturb" something bigger than themselves. Perhaps his life had led up to this.

Nick Begich, Jr. was raised in a political family where "making a difference" was a way of life. His father, Nick Begich, Sr., served as a state senator and later a representative in the United States Congress, and his mother Pegge was politically active in Alaska for more than 30 years.

After the disappearance of the airplane carrying his father and U.S. House Majority Leader Hale Boggs in 1972 when Nick Jr. was a teenager, his life changed irrevocably. However, the theme instilled by his parents was one of service and persistence. He and his five siblings between themselves also chalked up a lifetime of political experience.

But an equally strong thread in Nick's life was an interest in science. His early investigations led to an invitation to the 1978 International Biorhythm Research Association conference in Atlanta, as a youthful science "outsider" among

33 National Telecommunications and Information Administration Preliminary Assessment of Air Force Ionospheric Research Instrument, Stage 2, Oct. 1,1993.

fifty senior scientists from around the world. Most were in the life sciences. The youth presented a simple paper about the idea that his country's researchers over-specialized and that multidisciplinary teams were the way to breakthroughs in science. His associations from this early experience led to a lasting interest in electrophysiology and life sciences. The studies became his creative outlet while he worked at mundane administrative jobs.

With this background, he could sort through the HAARP technical documents and see implications of its type of ionospheric interference. As he saw it, the government had understated the risks. As had fellow Alaskan Clare Zickuhr and others, he sent "piles of files" out to friends around the world, and information flooded back.

In the summer of 1994, Begich wrote an article about HAARP for Nexus magazine, to get the story out. He mentioned the Eastland patent, but acknowledged that it was controversial,

"The United States military denies that the HAARP project has anything to do with these patents. However, a careful review of the government documents leading to the contract with APTI leads one to the conclusion that... the military is deliberately attempting to mislead."

"While it is true that the device being built will not produce the full effects described in the patents, it is a necessary step in proving the effectiveness of the technology, in advance of a larger antenna array..."

"...patent number 4,686,605, issued August 11, 1987...is one of three related patents by the same inventor, one of which was locked up under a Navy National Security Order in the late 1980's."

In his Nexus article, Begich said that the Eastlund patents go beyond the applications dreamed of by Tesla. The Eastlund patent said that scientists in the previous few years had been trying to learn about the belts of trapped electrons and ions above the earth, in order to control and use the phenomena for beneficial uses;

"For example, in the late 1950's and early 1960s, both the United States and the USSR detonated a series of nuclear devices...to generate large numbers of charged particles at various altitudes..."34

"This can cause confusion of or interference with, or even complete disruption of, guidance systems employed by even the most sophisticated of airplanes and missiles. "35

'The ability to employ and transmit over very wide areas of the earth...electromagnetic waves of varying frequencies...provides a unique ability to interfere at will with all modes of communication, land sea and/or air, at the same time."36

34 united States patent number 4,686,605, issued August 11,1987.
35 Ibid.
36 Ibid.

"...this invention provides the ability to put unprecedented amounts of power in the Earth's atmosphere at strategic locations and to maintain the power injection level, particularly if random pulsing is employed, in a manner far more precise and better controlled than heretofore accomplished by the prior art, particularly by the detonation of nuclear devices., ."37

"...what is used to disrupt another's communications can be employed by one knowledgeable of this invention as a communication network at the same time. In addition, once one's own communication network is established, the far-reaching effects of this invention could be employed to pick up communications signals of others for intelligence purposes... "38

Eastlund spelled out other possible developments of his super-heater in the sky: "...missile or aircraft destruction, deflection or confusion could result, particularly when relativistic particles are employed."

"Also, large regions of the atmosphere could be lifted to an unexpectedly high altitude so that missiles encounter unexpected...drag forces with resultant destruction or deflection..."39

"Weather modification is possible by, for example, altering upper atmosphere wind patterns by constructing one or more plumes of atmospheric particles which will act as a lens or focusing device. "40

"Also...molecular modification of the atmosphere can take place so that positive environmental effects can be achieved. Besides actually changing the molecular composition of an atmospheric region, a particular molecule or molecules can be chosen for increased presence. For example, ozone, nitrogen etc. concentrations in the atmosphere could be artificially increased. Similarly, environmental enhancement could be achieved by causing the breakup of various chemical entities such as carbon dioxide, carbon monoxide, nitrous oxides, and the like..."4l

Begich pointed out to Nexus readers that the HAARP device being built at that time was not big enough to test ail of Easthmd's ideas. But it certainly looked like the military was interested in his patents. Begich had experience with "procurement" - the bureaucratic term for getting government contracts - and had once worked in the heart of Texas' defense contractor country. The facts of this case jumped out at him.

On November 3, 1993, the U.S. Air Force announced that the prime contractor on the first phase of the HAARP project was ARCO Power Technologies Inc. (APTI). At the time the project was put out for bids, APTI was a subsidiary of Atlantic Richfield Oil Company (ARCO) and owned the patent rights to Eastlund's

37 united States patent number 4,686,605, issued August 11, 1987.
38 Ibid.
39 Ibid.
40 Ibid.
41 Ibid.

ionosphere-altering schemes, Begich looked up APT1 in the Dun & Bradstreet directory of corporations42 and learned that APTI had a president in Los Angeles and a staff of 25 employees in Washington DC, with sales of only $5 million a year,

How did a small subsidiary get the military contract for such a large project? According to the record, it won the right to build the project through exemptions in the military procurement process. The HAARP contract with APTI was more than five times larger than APTIs annual sales. As Begich saw it, the only way a virtually-unknown company in the military contracting arena could get such a contract is if they had proprietary information needed by the project. The trail circled back to the Eastlund patents,

Begich quoted the May-June 1994 issue of Microwave News, in which Eastlund described a "full, global shield" of accelerated electrons created with radio frequency (RF) transmitters. The HAARP project "obviously looks like a first step inwards this", Eastlund told the editor. However, he noted that the uses he described would need a significantly more powerful device with a much larger antenna than the HAARP array.

While the Eastlund controversy continued, Begich wrote that a February 1990 paper from the Navy and Air FoTce43 made it clear that the project goal is to learn how to manipulate the ionosphere on a more grand scale than the then Soviet Union could do with its similar facilities. HAARP would be the largest ionospheric heater in the world, located in a latitude most conducive to putting Eastlund's invention into practice. Looking at the northern lights, as the aurora is called in Alaska, was not the point of HAARP. Begich quoted from the U.S. Air Force "Record of Decision, High-frequency Active Auroral Research Program (HAARP), Final Environmental Impact Statement" of October 18, 1993:

"The data obtained from the proposed research would be used to analyze basic ionospheric properties and to assess the potential for developing ionospheric enhancement technology for communications and surveillance systems... Apotential DoD (Dept. of Defense) application of the research is to provide communications to submerged submarines. These and many other research applications are expected to greatly enhance present DoD technology."

"The Air Force and Navy proposes to build and operate the most versatile and capable ionospheric research facility in the world. The government intends to utilize the unused Over-the-Horizon Backscatter (radar) site near Gakona, Alaska, for this program... Research requirements stipulated that the selected site must fall in the range of latitudes between 61 and 65 degrees, either north or south. Siting constraints included that the site must be: on US soil, on DoD land to the maximum extent practical..."

The response to the Nexus article showed that more people were interested in HAARP than the Alaskan researchers had originally expected, Begich noticed that

42 America's Corporate Families 1993 ,1, p. 156.
43 "Joint Services Program Plans and Activities", February 1990.

many of the independent researchers were afraid to identify themselves and "take on the government", One group of individuals whom Begich - appreciating their wish to be anonymous - began to refer to as "the guys in the bush" sent him volumes of files that they saw as relating to HAARP, Books, papers, news clippings and Internet items arrived each week, as well as occasional government records. He paid less attention to the Internet items, unless they mentioned books or articles or patents he could check out firsthand. One day a box arrived at the Begich family home, containing about eighteen inches of new files.

About this time, Sir Anton Jayasuriya of the Open International University of Complementary Medicines invited Begich to present a paper at the World Congress on Alternative Medicines and to receive a doctorate degree in traditional medicine. The honor was totally unexpected, and he packed for travel. As it turned out, circumstances did not allow him to travel to Sri Lanka, so he planned a trip to Finland instead. In Finland he would at last see his old friend (from the 1978 conference and from correspondence) Dr. Reijo Makela, in order to talk about promoting Makela's scientific discoveries in electrophysiology.

Meanwhile one of the HAARP researchers in Canada had written to thank him for the Nexus article. Jeane Manning was a writer who had just completed a manuscript, The Coming Energy Revolution. She suggested they collaborate on an article for an American publication. Begich replied by telephoning her in Vancouver. They learned that each had too much pressing information in their files to compress into an article. It had to be a book.

On his stopover at the Seattle airport before flying to Finland, Begich met with Manning for a few hours and found they shared similar values. They decided to try long-distance book authoring.

While he was in Finland, the only unsettling event was that HAARP-related files which he had forwarded to Reijo Makela had mysteriously disappeared from Reijo's office. The two men discussed the project anyway, and concluded that HAARP was an affront to good sense and a threat to safety. This conclusion was based on Makela's advanced understanding of the effects of radio waves upon people.

Back in Anchorage, in early 1995 the Begiches sent an airline ticket to Jeane Manning, and their nine year old son moved into his sisters' bedroom for two weeks when she arrived. Nick took time off from work and they spread HAARP-related files for twenty feet across the carpet in his study, while typing on his computer and a borrowed notebook computer. Shelah joined them for a visit to NO HAARP activist Clare Zickuhr and his wife, and they also drove hours into the "bush" country to speak with other activists. The most revealing interviews, however, took place over the telephone lines. While in Alaska, Jeane phoned Houston, Texas, and interviewed a man who has apparently been elbowed out of the inner circle of gigawatt-heater project planners. Was it because he talked too much to the media?

"Scientists build toys. This is a neat big toy."44
Dr. Bernard Eastlund, talking about HAARP.

"Tests of this kind could cause irreversible damage."45
Dr. Richard Williams, 1988.

Chapter Four

SKYBUSTERS UNDER SECRECY

Dr. Bernard Eastlund chuckles as he tells about the time that the metaphorical light bulb clicked between his mind and that of Dr. Simon Ramo.

"He's a big guy in military science," Eastlund explained to Manning in a telephone interview. "He was the founder of TRW and all these big companies. They're a big defense contractor. At the time he was a board member for ARCO (Atlantic Richfield Oil Company)."

When Eastlund walked into the meeting room that day in the 1980's to give a presentation, he was aware of the senior scientist's presence. Eastlund had a collection of transparencies ready to slap onto the audiovisual table, to illustrate his new concept for focusing a powerful beam of radio-frequency or microwave energy onto the ionosphere. He had several reasons to expect approval. For one, whoever would fire up electrical generators to power his proposed giant transmitter could be a big paying customer for ARCO's natural gas fields on the North Slope of Alaska,

"I came in with my viewgraphs," Eastlund recalls. "I showed one viewgraph on the location of the North Slope of Alaska. Where the earth's magnetic field is, where Russia is, and everything. Then 1 had another slide where I showed taking the gas, having an antenna and beaming it up."

Eastlund didn't have to show the next slide. The idea clicked and the military contractor apparently wanted to just think about it foT a minute.

"(Ramo) basically told me to shut up, and sat there and said, 'such a great idea!' I didn't have to show any of the detail," Eastlund said with obvious pride. "It's that kind of a concept. In fact, dealing with knowledgeable people, I never made it beyond the third view graph. Then they all started inventing, themselves."

The senior scientist whom Eastlund impressed is an inventor who has patents on microwave technology, electron optics and guided missiles. Ramo co-authored the book Fields and Waves in Modern Radio in 1944, and in general he is a knowledgeable engineer.

Eastlund has been described as a soft-spoken, highly-reputable physicist, president of a technological company in Houston. "Eastlund is no wire-haired

44 Dr. Bernard Eastlund Feb, 20, 1995 interview with Jeane Manning.
45 Dr. Richard Williams, "Atmospheric Threat", Physics and Society, Apr. 1988.

madman," Omni magazine once said46, citing his degrees from Massachusetts institute of Technology and Columbia University, While working for eight years in the Atomic Energy Commission's fusion program in the early 1970's, for example, he co-invented a "fusion torch" that would use plasma leftovers from fusion reactors in recycling solid waste.

Some time after the meeting where Ramo heard Eastlund's beam focusing ideas, the two worked together on a patent that they filed in early 1985. Their "Method and Apparatus for Creating an Artificial Electron Cyclotron Heating Region of Plasma" was the second of a series of three patents that Eastlund assigned to a subsidiary of ARCO - Arco Power Technologies Inc. (APTI). Ramo's contribution to the concept was to use a large superconducting coil on the ground to modify earth's magnetic field at a high altitude, Eastlund said.

It had been a good time for Eastlund. The controversy over "the Eastlund patents" had not yet begun. No physicist had yet warned that experimenting with his patents could turn into "an act of global vandalism".

Eastlund had been hired by ARCO as a consultant, to come up with uses for the 30 trillion cubic feet of natural gas in ARCO's reserves on the North Slope of Alaska. ARCO's problem was the remote location of the gas. Building a pipeline and shunting the gas to industrial centers was no answer; that pipeline megaproject had been on the oil industry agenda for more than twenty years without development. The company would get maximum profit if it found a use for its product right there on the North Slope itself.

In that scarcely-populated stretch of icebound real estate, who would be the customers for massive amounts of power? Looking at it in terms of burning the gas on the spot to power a huge generator and make electricity, Eastlund realized that they were talking billions of watts of electricity, not just the millions watts put out by a city's megawatt power plant. What could his boss possibly do with a few gigawatts?

He rejected every idea that needed smaller amounts of power. Eventually Eastlund came up with a wild plan - use all that energy to power the biggest "ionospheric heater" in the world. The equipment on the ground would beam focused energy up to the ionosphere, where the beamed radio frequency (RF) waves would interact powerfully with charged particles that are always trapped there. The heating effect of the focused beam would then dramatically push a plume - a large section of the ionosphere - up and outward from Earth.

As it later turned out, the big ionospheric heater in Alaska would be located far from the North Slope gas fields. But the challenge had served to spark Eastlund's inventiveness.

Anyone outside the military-industrial-academic complex, watching Eastlund research the history of other ionospheric heaters, might wonder - why would anyone want to heat and lift part of the upper atmosphere? Was the motive to allow

46 Bill Lawren, "Rediscovering Tesla", Omni magazine, March 1988.

his country to get a jump ahead of the Soviet Union, which had experimented with related technology? Only they know for sure, Some of Eastlund's research was supported by the Defense Advanced Research Projects Agency (DARPA)[47] under the project title "Alaska North Slope Electric Missile Shield".

The United States already had smaller antennae in several locations, for experiments in bouncing radio waves off the ionosphere. With a bigger tool than anyone else and the ability to focus its beam, the United States military could fry incoming missiles, disrupt global communications, change the chemical composition of the upper atmosphere and even engineer weather by redirecting very high wind patterns (jet streams).

Other tricks which his invention could do would be debated a few years later. "Earth-penetrating tomography", (scanning the earth with radiations bounced off the sky - basically, X-raying the ground in a search for tunnels and hidden caches) is a use which would show up in the National Defense Authorization Act for 1995. And there are possible uses that are more futuristic than the tomography.

In the 1980's it wasn't an easy sell to the patent office, however. When he applied for the first of several patents on his ionospheric- heater invention, the patent examiner told Eastlund that his invention sounded like science fiction. Eastlund replied that the technology was all known. Step-by-step, he backed up his claims with paperwork that proved that the technology was possible. Then the government officials were impressed. But before the document moved out into the public literature in 1991, the Navy first slapped a Secrecy Order on his U.S. patent number 5,038,664 for a year. That patent told how to make a "shell of relativistic particles" high in the sky. "Relativistic" particles travel at near the speed of light.

When Eastlund had the military's attention, the Pentagon opened its pocketbook and spent hundreds of thousands of dollars on the initial study of his claims. Eastlund said in a 1988 radio interview that the defense department had done a lot of work on his concepts, but he was not at liberty to give details. He later told Manning that after he had worked within ARCO foT a year and applied for patents, Defense Advanced Research Project Agency (DARPA) had combed through his theories then issued a contract for him to study how to generate the relativistic electrons in the ionosphere.

After 1986 he was off the ARCO payroll, before the invention drew much lire in the media. Its first major publicity was in 1988, the year after one of his patents on the system - how to beam huge amounts of electromagnetic energy to selected regions of the upper atmosphere48 - was made public.

The publicized patent was titled "A Method and Apparatus for Altering a Region of the Earth's Atmosphere, Ionosphere and Magnetosphere". Eastlund told Alex Chadwick of National Public Radio that the patent should have been kept under government secrecy. He said he had been unhappy that it was issued publicly, but, as

47 DARPA Contract No. DAAHDJ-86-C-0420 "Alaska North Slope Electric Missile Shield.
46 Bill Lawren, "Rediscovering Tesla", Omni magazine, March 1988.

he understood it, the patent office does not keep basic "fundamental information" secret. "You don't get a patent if you don't describe in enough detail to another person how to use it," he said. Specifics of military applications of his patent remain proprietary (secret), he added.

The radio interviewer, Chadwick, confronted Eastlund about aspects which troubled the interviewer - mainly the enormity of what the inventor claimed his invention could do. Effects such as changing the planet's atmosphere sounded like something out of a Jules Verne novel.

Sounding quite proud of his accomplishments, Eastlund replied that nothing in the patent was science fiction; it is based on combining known technologies. "Many of the applications in here are aimed at beneficial effects."

Are artificial sunspot-effects beneficial? Chadwick pointed to page eleven of the patent, where Eastlund claimed that his invention could disrupt communications all over the world. With a short laugh, the inventor acknowledged the claim. "And obviously that doesn't sound too beneficial, so I'm contradicting my answer to the last statement. But in the patent itself is the fact that you can do that. Sunspots or solar flares will disrupt communications badly. This would do that through basically the same mechanism."

Eastlund's enthusiasm for planetary-scale engineering came through just as clearly in an interview with Omni magazine. While acknowledging that many of the uses of his invention are warlike, he also talked about "more benign" uses. His view of benign included using the technology to reroute the high-altitude jet stream, which is a major player in shaping global weather. Another way to control the weather with his technology would be to build "plumes of atmospheric particles to act as a lens or focusing device" for sunlight, he told Omni. With this, the people controlling the antennae could aim in such a way that the return beams would hit a certain part of the earth. With the heating ability, they could experiment until they could control wind patterns in a specific place.

The Omni article explained. "What this means, he says, is that by controlling local weather patterns one could, say, bring rain to Ethiopia or alter the summer storm pattern in the Caribbean. His device might even help regenerate the depleted ozone layer, patch the ozone hole over Antarctica, or break up atmospheric industrial pollutants like carbon monoxide or nitrous oxide."

Not every scientist shared Eastlund's eagerness to experiment with the ionosphere. Dr. Richard Williams, a physicist with the David Sarnoff Research Center in Princeton, New Jersey, sent a letter to a scientific journal warning that Eastlund's invention might become a serious threat to the earth's atmosphere49. Williams summed up the contents in Eastlund/APTI's patent for altering the atmosphere, ionosphere and/or magnetosphere:

49 Richard Williams, "Atmospheric Threat", Physics and Society Vol. 17 No. 2 April 1988, page 16.

"The idea of the invention is to generate a beam of radio waves of enormous intensity and direct this toward the upper atmosphere. At certain altitudes, electron cyclotron resonance heating of existing electrons would cause further ionization of the neutral particles of the atmosphere. Among the intended uses of the invention are to 'disrupt microwave transmissions of satellites' or to cause 'even total disruption of communications over a very large portion of the earth'. Other intended uses include weather modification, lifting large regions of the atmosphere, and intercepting incoming missiles,"

Williams came up with a pithy one-word description of the concept - skybusting. "This 'skybusting' concept may sound like a tall order, but look at the power levels that will be used (10-to-the-ninth-power up to 10-to-the-eleventh-power watts)! This is equivalent to the output of ten to 300 large power generating stations."

High-energy experiments pose a danger to the upper atmosphere, Williams said. He then referred to Eastlund's statement in the radio interview - that a secret military project was already underway to study and implement the invention. Williams had a chilling warning.

"Tests of this kind could cause irreversible damage."

Williams reminded his fellow physicists that small changes in the upper atmosphere, such as mere traces of manmade substances, can have a profound effect. An example is the destructive effects on the ozone layer, a protective layer of Earth's atmosphere which absorbs dangerous ultraviolet radiation. While making it clear that the ozone layer and ionosphere are separate layers, physicists say the layers are interconnected as well as separate. Regarding the ozone layer, Williams said, "After long negotiations, the federal government had joined in an international treaty to protect the ozone layer. A few tests of the Eastlund invention might undo all that we have accomplished with the treaty."

Effects in the upper atmosphere cannot be kept in one spot, Williams noted.

The publicity was apparently not welcomed by ARCO Power Technologies Inc. In August of 1992, Jeane Manning had confronted the president of APTI, Ramy Shanny, Ph.D., after a power-beaming workshop at an International Energy Conversion Engineering Conference. She had come to the IECEC meeting to further educate herself about energy alternatives, but one item on the program took her away from the "advanced and innovative systems" sessions for a morning. The schedule said that a representative of APTI would be in a workshop on poweT-beaming, and she wanted to ask the person whether APTI was going to build Eastlund's invention.

Manning slipped in the room without needing to point to the press pass on her suit jacket. The workshop was a rather intimate gathering of colleagues from national laboratories, the federal department of energy and universities; the meeting room held less than thirty people. There was one other woman in the room, also

looking severely professional as befits a senior research scientist at a national laboratory.

The discussion bounced from topic to topic, as if the participants were in a hurry to get the formal meeting over and meet informally. Canada was involved in an experimental aircraft that flew to 150 miles in 1987 from microwave power beamed from the ground, Manning learned. ARCO, Raytheon, Jet Propulsion Laboratory and Japanese scientists made history in microwave-power beaming, These aircraft or satellite projects can be used for surveillance, the speakers bragged. Or to relay power for "development of remote natural resources".

One well-dressed man stood up and asked for cooperation among the champions of laser beaming and the proponents of microwave beaming, "...to find out what the stuff can do. Let's get a team together and solicit money from the folks with the pocketbooks."

A project engineer for a large university's Center for Space Power was asked about environmental effects of microwave power beaming. He replied that the biggest challenge for the people in the room was the public perception of an environmental impact. Studies about microwave energy and microwave ovens were done in the 1970's and '80's, he noted, but since then the bulk of the environmental studies have focused on 60-hz transmission lines. "But I think, with the data that's out there, you can show that at the power densities we're talking about operating, there certainly will not be any thermal effects, and the power densities where the people will be going close to the beam will be such that you're not going to have a problem."

To Manning's surprise, he admitted that "the big question is 'what (when people are exposed to power-beaming) are the effects from low-density, long-term duration?' There hasn't been any kind of study on that, and that's going to be such a detailed involved intensive study that it's not going to be done in the near future. Because there's no mandate."

Manning swore quietly into her tape recorder. "Then why in the world are they asking for money to build their toys before such a study is done?" She didn't ask the question aloud, because she wanted to hear as much as possible from the next speaker - the president of APTI. Perhaps she could find out if the beaming to ionosphere experiment had been canceled,

Dr. Shanny was a rather swarthy and large man, dressed in a well-tailored dark suit, His presentation was brief, with an audiovisual about ARCO's experiment in beaming microwave power to an aircraft in Canada, and a few comments. Perhaps being there was more important than giving a detailed report.

Afterward, Manning waited outside the meeting room door on the sun-dazzled patio, and stopped Shanny as he came out. She introduced herself with her business card from Explore! magazine, then asked him about the status of the Bernard Eastlund patented technology.

Shanny backed away from her, gesturing with his hands and using facial expressions to convey the impression that Eastland is crazy and the company was not going to have anything further to do with Eastlund's futuristic patent.

Momentarily assured that APTI would not be building the mega-instrument, Manning let him rejoin his group and head for a restaurant. Then she replayed the scene in her mind and realized he had not given her a single complete sentence that she could quote. The message - disavowing Eastlund's work and reassuring her that APTI would not build such a technology - had cleverly been conveyed without Shanny having committing to uttering words.

A couple of years later, the giant defense contractor E-Systems bought Shanny's company, APTI. The trail from Eastlund's schemes was further buried in 1995, after Raytheon corporation bought the HAARP contract - and thus the APTI patents - from E-Systems,

Even if the contractors really did completely disown the controversial Eastlund patent # 4,686,605, APTI was the assignee on a dozen others whose technologies were related. APTI, and the larger defense contractors who later swallowed APTI and its patents, probably did leave Bernard Eastlund's controversial patents in their dust50 as they accelerated their power-beaming technology. Among the unpublicized patents - also assigned to APTI Inc. -that Nick Begich uncovered were

- 5,068,669 "Power Beaming System";
- 5,041,834 "Artificial Ionospheric Mirror Composed of a Plasma Layer..";
- 4,999,637 "Creation of Artificial Ionization Clouds Above the Earth";
- 4,817,495 "Defense System for Discriminating Between Objects in Space";
- 4,873,928 "Nuclear-Sized Explosions Without Radiation".

In the interview with Manning, Eastlund explained why his method for creating a high-energy missile shield was an improvement over the current Strategic Defense Initiatives type of beaming - no satellites needed. The antennae on the ground radiate energy into the areas high above the Earth without the use of particle beaming from satellites to accelerate electrons in the ionosphere. At very high altitudes, the effects would multiply if a high enough power level was used.

"I took a factor of about a million steps {increase) in power it could deliver at, say, 100 kilometers altitude. 1 took it way beyond what the slate of the art was at the time...It opened up new things. As I understand it, that's one of the selling points of HAARP-by having this massively-greater power, you can do a lot more interesting things. Basically, what 1 said in the patents."

50 Eastlund/APTI patent #4,686,605 "Method and Apparatus for Altering a Region in the Earth's Atmosphere, Ionosphere and Magnetosphere"; # 5,038,664 "Method for Producing a Shell of Relativistic Particles, held up one year by Navy secrecy order; and # 4,712,155 "Method and Apparatus for Creating an Artificial Electron Cyclotron".

Is it possible that the HAARP scientists could have miniaturized the technology so that they don't need such a large area of land and electrical power as called for in Eastlund's patents? Manning asked him.
"It's entirely possible," he replied. "They have had a lot of good engineers working on it for some time. I would hope they have improved it."

In 1994 Eastlund wrote to an Australian who was concerned about HAARPs impact on New Zealand and Australia, David White.51 "As we discussed, this (HAARP) antenna may be a first step toward determining if some of the applications discussed in my patents could be accomplished. Most of the military applications require generation of relativistic electrons in the ionosphere. It is my understanding that one of the purposes of the HAARP antenna is to study the generation of relativistic electrons."

The speeded-up electrons would travel along Earth's magnetic field lines and could either "bounce" on a field line over Australia and return to the north, or "be lost and fall into the atmosphere". "Don't panic," Eastlund wrote, "this happens very high in the atmosphere,"

"It is...years in the future that enough electrons might be generated to merit concern in the Southern hemisphere, and that only if it can be proven that such electrons can be created with the antenna."

In the meantime, Eastlund said, "since I stopped working for ARCO, I have spent some time investigating uses of the antenna for possible replenishment of the ozone holes, and for steering the jet stream for weather modification."

When the ionizing beams make some ozone by a breakdown in the atmosphere, he later told Manning, they also increase nitrogen compounds up there. "The problem is, it takes a lot of energy to make a lot of ozone." The scientist planned to continue to work on the problem.

He would like recognition for his part in inventing the HAARP advanced ionospheric heater. "They own it, but they can't take credit for it," he said. "I was upset, because 'internal politics' is why I was let go. I went to my patent lawyer, and he said 'Ben, don't worry about it. It's a far out idea...If it works, the United States government says you invented it. And they can't take that away.' "

As evidence that HAARP was based on Eastlund-type technology, he said, "...In the RFP (Request for Proposal) for the project, for example, they stated that generation of relativistic electrons was one of the objectives of the program."

Eastlund gave a vivid picture of how energetic those electrons are. "The electron that hits your TV screen is moving at 25,000 electron- volts. When it gets more than a half-a-million, that's when you call it relativistic. The ones (HAARP) is talking about are one to three million electron-volts."

51 March 26, 1994, letter from Bernard Eastlund to David White of Production Technologies Inc., quoted with permission from Dr. Eastlund.

The patent he wrote with Simon Ramo dealt with the how-to. "How you turn the knobs on your antennae and beam things and make things happen." Since the Earth's magnetic field is barely strong enough to turn the needle on a compass, Ramo added the concept of using a very large ground-based superconducting coil to modify the amount of the earth's magnetic field at a certain altitude, Eastlund told Manning, "To give you a little more ability to control things...It would allow you to more effectively do things up at the high altitude."

The reporter asked, "Has anyone raised the thought of things getting out of control?"

Eastlund didn't seem to notice the anger behind her question, and he gave an enthusiastic technical answer. "I don't mean control in that sense," he said, "Let's say you want electrons to get hot. You send your waves through and they get hot, but only use up one per cent of what you sent...So you have to use a huge antenna....Control in terms of doing what you want."

The physicist emphasized that he is in favor of HAARP. "If ten per cent of any of these things work out, it's going to be a very neat thing."

A growing number of people don't agree. Before we meet Clare Zickuhr and "the guys in the bush", the next chapter will look back at the history of attempts to do "neat things" in the upper atmosphere.

"When the Earth came alive it began constructing its own membrane, for the general purpose of editing the sun...The sky is a miraculous achievement. "52
Lewis Thomas, 1973

Chapter Five

HIGH ON THE SKY

Countless suns in other galaxies spray cosmic rays in all directions continuously. Closer to home, our own sun radiates gamma rays, X-rays and shorter wavelengths of ultraviolet light. When they hit the outer layers of earth's atmosphere, these cosmic rays are absorbed by atoms, but in the process electrons are knocked off the atoms. Thus there is a constant flux (flow) of electrons at this altitude, and the atoms are changed to positively charged ions. This process gave the ionosphere its name. Although ionization happens at heights as high above the earth as 1,000 kilometers and as low as 50, the positively charged ions and negative electrons are most dense at altitudes of 80 to 400 kilometers. In non-metric terms, the ionosphere begins at an altitude of about 30 miles and goes up to about 300 miles or more.

This natural electrically charged shield around the earth filters harmful wavelengths of solar radiation, protecting the surface of Earth from significant bombardment.53

Blown toward Earth on the solar wind, electrically charged particles follow Earth's magnetic field lines. Along such paths of least resistance, high energy particles funnel toward the magnetic poles of Earth, squeeze into a poleward current called the electrojet, and are dumped toward the earth. Sometimes the electrojet dwindles, but at other times a solar flare floods the system with high energy particles and the sky lights up into the dancing, shifting curtains of an auroral display. At the south pole it is called the aurora australis, and the northern lights is the aurora borealis.

For eons the electrojet has flowed in the form of a direct current into the polar regions of Earth. Who would want to change the electrojet?

THE PATH TO A GIGA PROJECT

In a way it began with a few puzzled radio listeners. In 1933 a man in Eindhoven, Holland tried to listen to a radio station in Beromunster, Switzerland. Suddenly he was hearing two stations. The powerful Radio Luxembourg was not supposed to tune in at this frequency; it broadcast at a frequency far apart on the dial, but here it was superimposed on the Swiss station.

52 Lewis Thomas, "The World's Biggest Membrane, The Lives of a Cell", Massachusetts Medical Society 1973.
53 Robert W. Christopherson, Geosystems. Macmilian NY 1992.

The Luxembourg Effect, as it was later called, did not remain a mystery long. The Dutch scientist named Tellegen figured out that the cross modulation of the radio signals was a wave interaction caused by nonlinear characteristics of the ionosphere.54 What this means to non-scientists is that reactions of the ionosphere are unpredictable.

Then other scientists also realized that high power radio waves changed the temperature and density of electrons in the ionosphere and that other radio signals passing through the "modified" region were influenced. They experimented with wave interaction for thirty years and eventually were certain that directing high power waves into the ionosphere produced instabilities. Their tool was a transmitter – array of antennae - called an ionospheric heater. (Press releases now refer to it as an Ionospheric Research Instrument, but this book will call a heater a heater.) For the most part, ionospheric heaters were operated by universities and research institutes. Stanford Research Institute (SRI) International developed much of the high frequency transmitting programs with money from the Defense Nuclear Agency.55 The newest, multi-purpose, tool being built for HAARP, however, is directed from Phillips Air Force Base.

PENN STATE PIONEERED HEATERS

Anthony Ferraro, Ph.D., is a professor of electrical engineering at Penn State university, a school that was a pioneer in experimenting with this knowledge. In 1966, electrical engineers built a 500 kilowatt (kw) ionospheric heater at a site near the campus, with an effective radiated power of 14 megawatts. Ferraro developed a technique of beaming power with two transmitters at the same time, as a way of probing. A high-power transmitter would heat a region of the lower ionosphere while a weaker transmitter was pulsing. Thus the experimenters could study the wave interaction.56 Penn State has been paid to do ionospheric modification research continuously for 30 years.

Although they had a heateT before Alaska or Norway, the university had to give up operating theirs after the neighbors complained. Firefighters in northeastern Canada, foT example, had high frequency radios on board their airplanes. Although Penn State's ionospheric heater was not on the same frequency, it was so strong that the airplane radios would "kind of blank out", recalls Ferraro. "We developed cooperative techniques; we would shut down whenever they wanted us to, but it became so difficult that we just had to give up. Heaters went to remote areas like Puerto Rico."57

The first large ionospheric heater in the United States was built at Plattesville, Colorado, in the 1960's. In 1983 the transmitter and antenna array were moved from Colorado to a site 40 km east of Fairbanks, Alaska. The Perm State research team was among those who won contracts from the Navy to conduct experiments using the High Power Auroral Stimulation (HIPAS) facility there.

54 Ray J. Lunnen, Jr. and Anthony J. Ferraro, "High Frequency Active Auroral Research Program", Pennsylvania State in house publication.
55 National Telecommunications and information Administration memo, "NTIA Preliminary Assessment of Air Force Ionospheric Research Instrument", Oct, 1, 1993.
56 Interview with John D. Matthews, electrical engineering department, Penn State,
57 Jeane Manning's May, 1995, interview with Tony Ferraro.

"The initial idea, not connected with my work, was to create an artificial northern Lights," said Tony Ferraro. "There was not sufficient power to do that."

Why make an artificial aurora borealis? He replied that the plasma physicists wanted to control the northern lights to learn more about the physics which created them. Ferraro instead came in and used the facility to modulate the electrojet. "These currents can be modulated by high power transmitters so that they could be made to act as little antennas." Ferraro explained that in their natural state the ionospheric currents are direct current (DC), as is the electricity from a battery. "By modulating that atmospheric region from these high power transmitters we can convert (the electrojet current), in a small volume, into alternating currents. Alternating current flowing in a wire is an antenna. Now, these are not flowing in wires; they're flowing in space. But it's the same principle. We can create a little antenna."

The experimenters wanted to generate Very Low Frequency (VLF) and Extremely Low Frequency (ELF) electromagnetic waves from that antenna in the upper sky, because VLF and ELF waves can travel almost around the world with very little loss. They generated the waves, "...but not strong enough to be of practical interest...That led to the Navy and Air Force funding an even larger ionospheric modifier - HAARP." HAARP is not only meant for generating the low frequencies that would occur with a strong electrojet, Ferraro said. "It has a wide, diverse utilization."

The operators sitting at HAARPs instrument control/monitoring console indeed have a versatile tool at their fingertips. It includes a waveform generator capable of sending a wide variety of modulated signals to the antenna array. Then the operators can whip the narrow beam of radio frequency (RF) energy around in the sky at will. An article from a Penn State publication says "array control permits slewing the beam to arbitrary locations within the overhead 30 degree cone within ten microseconds."

Visual displays tell the operators how the experiment is progressing, and local and remote sensors - incoherent scatter radar, riometers and ionsounders and other esoteric sounding apparatus - monitor the ionosphere.

The Penn State publication article adds that after the major parts of HAARP are evaluated in the field, "a comprehensive series of tests will be completed as a demonstration of the IRI (Ionospheric Research Instrument) capability to the user community. The goals of HAARP are ambitious, nevertheless, state of the art capability will allow us to realize this powerful scientific research instrument which will probe the Alaskan sky."

Long before HAARP was conceived, the former Soviet Union built more powerful (one gigawatt at Zelenogradskaya near Moscow) heaters than the west, and involved more scientists in ionosphere changing experiments than the West. More recently, Max Planck Institute in Germany built a heater at Tromso, Norway. In 1991 the Europeans caught up to the Russians by beaming one gigawatt of effective radiated power from Tromso.

The language in some documents hints that an element of mine is bigger than yours competition goaded the Americans to build a facility that would be three times more powerful than anything the Russians or the Germans have. Here we must make it clear that an ionospheric heater isn't judged by height. It may look like a five or ten acre field of fifty-foot high crosses (technically called crossed dipoles) in a square arrangement. The larger the area covered by antennae, the more powerful.

Although they are without an ionospheric heater, Penn State still has a respectably sized department involved in ionospheric modification - "about ten faculty and maybe 20 grad students". Formerly called the ionospheric research lab, it has become Communications and Space Sciences.

"It used to be very large, and very interdisciplinary with math, chemistry and physics people in it. Now it's primarily electrical engineering," Ferraro said.

* * *

John D. Matthews is a physicist who finds himself in the electrical engineering department at Penn State because of consolidation of departments. His specialty is the area of the ionosphere down at about the 100 kilometer altitude. During a phone interview he noted that the main radar (for high frequency ionospheric heating experiments) at Arecibo, Puerto Rico, can significantly heat the lower ionosphere as well as the upper. The heating is a Tesult of a high poweT "diagnostic" instrument. Arecibo is currently getting a major upgrade.

Most of the heating is done at around 200 kilometers altitude - called the Lower F region of the ionosphere - because it is easier to heat that higher region to the maximum.

Penn State got in on the ground floor with HAARP. In 1991 several departments at the university - the Applied Research Laboratory, Computer Engineering and Engineering Electronic Design Services - combined resources to go after a desirable contract. They were among the winners. Penn State, APTI and Raytheon Corporation were each given contracts to study how to design the HAARP facility. Afterward, APTI invited Penn State to join it, along with SRI International and Ahtna Inc., an Alaskan corporation, as a team. The Office of Naval Research chose their team to build and demonstrate the powerful ionospheric heater near Gakona, Alaska. "The capability will be further expanded to its final world class performance capability in 1996."58

HAARP: SECRET DUETS AND TRIOS?

Ionospheric heaters are a very specialized area of research. "There are two groups in the Soviet Union, several people in Europe and maybe ten people in the states. That's about it," said Sacha Koustov, a Canadian/Russian ionospheric scientist at the University of Saskatchewan. Like most of the atmospheric scientists interviewed, he was not familiar with the HAARP literature.

58 Hay J. Lunnen, Jr. and Anthony J. Ferraro, "High Frequency Active Auroral Research Program", Pennsylvania State in house publication,

The only way there could be amplification of the electromagnetic waves once they reach the ionosphere, in his opinion, would be with a special experiment using two transmitters beaming onto the same spot. The interactions of the radio waves can cause amplifications, said Koustov. Such highly energetic reactions can even create so-called gravity waves, he said. That is getting into an area of advanced science which is beyond the scope of this book.

Co-author of Angels Don't Play This HAARP Dr. Nick Begich discovered recently that HAARP planners intend to fire up more than one ionospheric heater at a time and operate them in concert. This test is to be conducted between September 11, 1995 and September 22, 1995 using HIPAS and HAARP at low power settings. What will happen even at these low levels of power is unknown and unclear.

A HISTORY OF MAD SCIENCE

Begich's home state of Alaska has met ambitious scientists in the past. One may have had more academic credentials, clout and charm than common sense. Dr. Edward Teller, known as the "Father of the H-bomb", traveled to Alaska in 1958 with a proposal to blast a chunk of that state's coastline off the map. As spokesman for the nuclear establishment, he wanted to prove that nuclear explosions were a tool for geographical engineering. Teller was widely quoted as telling Alaskans "If your mountain isn't in the right place, drop us a card."

Teller's colleagues at Lawrence Radiation Laboratory came up with Project Chariot as part of Project Plowshare. Their plan was to explode six thermonuclear bombs underground at Cape Thompson, Alaska, to dig a harbor.

Uncritical technophiles almost bought the plan.

The Firecracker Boys, by Dan O'Neill reveals common threads that run through the history of proposals for questionable megaprojects. For one, the promoter sold it as an economic development opportunity - jobs for the people. That pitch convinced legislators, business groups and the media. Another supporter, as with HAARP, was the University of Alaska administration. Again, the appeal was the prospect of money and jobs for the state's residents.

O'Neill points out that during the planning stage the scientists ignored the Inupiat people who lived nearest to the site of the proposed nuclear bomb blasts - 30 miles from Ground Zero. A review of The Firecracker Boys said "O'Neill still marvels at the determination of the Eskimos who saw through the government's empty promises and outright lies."59

In the end they didn't blast that hole in the coast. Between the native peoples' stubborn opposition, and three heroic scientists who stood up and said it was a bad idea, it didn't happen.

59 Marilee Enge, "Blowing the Lid off a Nuclear Tale", Anchorage Daily News, Dec. 25, 1994.

As if to set an example of what happens to academics who speak out with independent views, the three brave scientists who opposed Project Chariot lost their jobs at the university and were blackballed from academia elsewhere. One had to leave the country to find work. When O'Neill researched his book, he told a newspaper reporter later, "there were still a lot of people on campus who were very sensitive about the topic, who didn't talk about it for years, decades."60

DESTROYING A RADIATION BELT

Milestones in the history of arrogant science also include the three space explosions of the U.S. military's Project Argus in 1958. Each shot spewed atomic particles into Earth's magnetic field where they were trapped and spiraled back and forth at high speeds. "In essence," said the New York Times, "the Argus experiments produced artificial belts comparable to the natural Van Allen radiation belt (regions of high- energy charged particles around the earth at between 2,000 and 12,000 miles altitudes). Thus, after each shot a curtain of radiation - that is, of extremely high speed particles - spread around the world."61

In the opinion of the authors, psychiatrists should be invited into thinktanks where decisions are made to "modify" one of Earth's protective layers. Shortly after Dr. James A. Van Allen discovered the two radiation belts around Earth - in the International Geophysical Year (1GY) of 1958, two physicists at the University of Minnesota proposed that a hydrogen bomb be exploded inside that radiation belt. According to the New York Times, the two physicists wrote "It might be amusing to end the IGY by destroying some of the radiation field first discovered during the IGY."

COPPER-WIRING THE SKY

The folksy saying, "what goes around, comes around", applies to what experimenters inject into a lower altitude jet stream as well as into the Van Allen belt. In the early 1960"s someone in the U.S. military apparently decided that the ionosphere had to be replaced because it was unpredictable (dynamic, lively - it danced with the ebb and flow of charged particles). They decreed that it had to be controlled. In their mindset, were telecommunications more important than the integrity of Earth's natural electric circuit?

The planetary-scale engineers tried to replace a ten by forty kilometer section of the ionosphere with a "telecommunications shield" of 350,000 copper needles tossed into orbit.62

The U.S. military did not know what the outcome would be in the early 1960s when they planned an assault on earth's magnetic field with copper needles (each 2-4 cm long). They planned to increase the size of the needle dump in space "if the project proves successful". Apparently it was a bust; it was hushed up and kept out of the mass media,

60 Marilee Enge, "Blowing the Lid off a Nuclear Tale", Anchorage Daily News, Dec. 25,1994.
61 Walter Sullivan, "Blast May Erase Radiation Belt," New York Times Apr. 30,1962.
62 Nigel Harle of Holland, "Vandalizing the Van Allen Belts", winter 1988-89, Earth Island Journal p. 11.

Another independent researcher, Leigh Richmond Donahue63 tracked events during the postwar years and through 1977 alongside a physics genius, her late husband Walter Richmond. She writes, "...when the military sent up a band of tiny copper wires into the ionosphere to orbit the planet so as to 'reflect radio waves and make reception clearer' we had the 8.5 Alaska earthquake, and Chile lost a good deal of its coast. That band of copper wires interfered with the planetary magnetic field."

Any ecological insensitivity of engineers in the US has been more than matched by their peers in other countries. Often the scientists in North America just had bigger allowances to spend and therefore could cause more damage. The former Soviet Union was reportedly getting ready to change the climate before the 1970's. That country's director of hydrometeorological work described proposals to make Russia a more comfortable place to live - at least until the ecological backlash that could have hit afterward. Proposals included removal of the Arctic ice pack, damming of the Bering Strait and rerouting Siberian rivers.64

If ordinary common sense people were invited into military thinktanks to vote on such projects, what would they say to the big boys with the big toys?

63 Private communication with Leigh Richmond Donahue of the Centric Foundation, Maggie Valley, North Carolina.
64 Lowell Ponte, The Cooling. Prentice-Hall Inc, NJ 1976.

"The military is going to give the ionosphere a big kick and see what happens."
Clare Zickuhr, formerly of Anchorage, Alaska, founder of NO HAARP.

They're like boys playing with a sharp stick, finding a sleeping bear and poking it in the butt to see what's going to happen."
Barbara Zickuhr

Chapter Six

NORTHERN EXPOSURE

At an age of about fifty years, Clare Zickuhr took time for assessment, and was satisfied as he looked around in the early 1990's. He had worked his way through data management jobs to a position as accountant for a multinational oil company, ARCO. The good life included hosting friends in a 3,000 square foot house on the bluff outside Anchorage, with a wall of windows overlooking Cook Inlet. And watching Beluga whales romp in the inlet, or standing beside his wife Barbara in companionable silence, contemplating a panoramic sunset over a distant mountain range. Barbara was content with her own range of interests, from collecting art to studying medical anthropology.

That the Zickuhrs would become activists in an eclectic group of environmentalists was too foreign a possibility to consider. A visit from a neighbor in October of 1993 changed their serene existence, however. Jim, a pilot with Alaska Airlines, came over one night and mentioned that at a pilots' meeting he had heard about a government project called HAARP that was going up "in the bush" northeast of Anchorage. Jim knew Clare was a ham radio operator who spent a couple of nights a week closeted with his shortwave equipment and that he ran three ham-nets. Jim bunded him a flyer which said HAARP was an acronym chosen by military agencies to name their project, which would include a large array of antennae on the ground beaming a billion watts of electromagnetic power - at radio frequencies - up through the atmosphere. It would be the biggest zapper in the world! Even if it didn't get beyond the megawatt (millions of watts) stage, such a transmitter was certain to interfere with communications in the bush. People in remote areas of Alaska rely on radios for life or death calls such as for a Medivac aircraft to save a child's life.

Jim wondered what electronic interference from HAARP could do to onboard systems on the jets which he pilots Clare listened to his worries about aircraft that are controlled by remote operation instead of having direct cable levering rudders and other equipment. Such a craft could be more susceptible to a big blast of energy that might lock it into position or over ride the remote control. Reassurances from the Federal Aviation Administration reported in the media were not the last word as far as pilots were concerned.

That night when Zickuhr sat down in front of his shortwave apparatus and went on the air, he asked other ham radio operators if they had heard about the HAARP

transmitter. They hadn't heard, but wanted to learn about the biggest "ionospheric heater" in the world. They learned that similar antennae in other countries had beamed electromagnetic power into high level experiments for years, but HAARP would be the most powerful, zapping the upper atmosphere with an unprecedented power level of energetic particles. Engineering Mother Nature - the planetary environment - would become a new ball game.

Some hams lived in areas where HAARP public relations people were holding public briefings, and these operators reported back on the air. The Pentagon had been shopping for a site, because HAARP's radio interference would be too strong to locate near military facilities.

"Then why do they think we want it in our own backyards?" asked some individuals whose communities were considered as possible sites. When the choice was made to build it near Gakona, a hamlet about 140 miles north of Prince William Sound, some of the on the air chatter died down.

While he still had time to sit in front of the two-story fireplace for a leisurely read, Clare had finished a book titled Miles from Nowhere. It was about people living in "the lower 48" states, in places where there were fewer than two people per square mile. The military had of course chosen such areas to do its hazardous testing such as nuclear blasts.

"Gakona reminds me of that Miles, from Nowhere theme," he told Barbara. "Few people around to complain."

Although he sympathized with bush dwellers concerned about how close they were to electromagnetic radiations from HAARP, his main question was more global. "What all is this thing going to do to the upper atmosphere?"

HAARP's public relations sheet described it as pure scientific research on the aurora borealis and research on the ionosphere's ability to affect communications. The U.S. Air Force and Navy were paying for the project, but they said it was not a weapons system. Later, Clare Zickuhr would learn that the technology definitely could be used for military purposes. He wondered what else they weren't telling the taxpayers about HAARP.

His training as an accountant led him to ask about the checks and balances in the situation. HAARP planners would choreograph experiments on the crucial envelope of charged particles which circled the planet - the ionosphere, which protects Earth's inhabitants, like a spherical umbrella, from cosmic radiations. What independent scientists - not in any way funded by the military - were monitoring this project? He could find none. Especially missing were biologists and independent atmospheric physicists, if there are any such independents.

"Basically," he concluded, "the military is going to give the ionosphere a big kick and see what happens. My biggest worry is what they're going to do by

punching holes in the ionosphere or heating it. It's going to have reactions that they don't know how to predict. Look at the past -they set off nuclear explosions in the atmosphere before they figured out 'hey that's going to cause problems' and changed the wind patterns for years."

Barbara shared his view, and expressed it with an Alaskan's common sense observation. "They're like boys playing with a sharp stick, finding a sleeping bear and poking it in the butt to see what's going to happen."

Clare ordered a copy of the HAARP Environmental Impact Statement (EIS), from which he took names of others who had questioned HAARP. He used that first mailing list to contact people who wanted to learn more about it, and he tried to get a group going in Anchorage.

Near the end of 1993, the Zickuhrs hosted a couple of meetings in their home. In the first meeting, as the assembled Alaskans expressed their views, Barbara realized she and Clare had opened their doors to people they probably would not have met in any social situation.

It was a bit of a shock, From the comfort of an upper middle class home and removed from subsistence level rural or urban alternative lifestyles, the Zickuhrs' world had turned fairly smoothly. She joked about being a bleeding heart liberal herself and Clare being more middle of the road in his views. These guests, however, ran the gamut of extremes from "let's shoot the government people" to "aliens are involved in this". Sometimes it felt like she was in a bad mystery novel. Previously neither of the Zickuhrs had run into fringe political views about, for a mild example, "black budget projects" which not even legislators know about,

Barbara later reflected that "For me, it was an exercise in social restraint, which isn't my gift. But I grew to really accept these people for what they were and worked with them. There were an amazing range of views, but in the end I could see that was a real plus."

By the next meeting, more people were involved in seriously trying to get answers about HAARP. One of the people pointed out that "the Environmental Impact Statement sort of pooh-poohed, or played down, the reactions in the ionosphere." Someone else at the meeting looked at a possible effect which would be more visible to Alaskans - game birds. The effect on migrating waterfowl was also played down in the EIS, someone mentioned, although to the credit of the government scientists they had admitted "we really don't know what the effect will be",

The first mailing list of around fifteen grew to one hundred and fifty who were sent updated information - a HAARP fact sheet, decision documents from the Air Force, and then the most valuable in terms of information, the Request for Proposal documents. With Zickuhr's accounting experience, he could understand it. HAARP documents they received at that time generally restricted discussion of military plans to the category "enhance C3 systems" which seemed to mean keeping track of where submarines are and what might be happening in a battle.

"That's ELF waves they're using for that," Clare pointed out. "Extremely Low Frequency waves, which peopLe in the lower forty-eight (states) fought against because of health risks, but we're up here 'miles from nowhere' and no one is going to react to it."

If no one else was going to resist the intrusive technology, he would have to do what he could. Who else would stand up? He ran into a wall of apathy:

- Local people around the site had been led to view HAARP as a source of a few gravel hauling or site maintenance jobs.

- A reporter at the Anchorage newspaper contributed to the NO HAARP "library", by passing on information he had been sent. However, his bosses apparently did not support his wish to write an in-depth article about the project.

- After Clare Zickuhr dropped off an information packet at the city's television station, he never got a response.

- A "grassroots" environmental group showed interest but didn't do anything.

- After the NO HAARP group sent information about waterfowl vs. HAARP to the headquarters of the Audubon Society, the society did not reply.

The Zickuhrs spent about $3,000 on telephone bills and mailings while opposing HAARP. Meanwhile, one of the "guys in the bush" encouraged other activists to write a couple of thousand words about HAARP, and Clare gave it a try. He wrote an article titled "Monster in the Wilderness" and sent it to Gar Smith in San Francisco, editor of Earth Island Journal. A technical consultant told the journal that the technology would be impossible. That stalled the printing of the article, until another tireless networker, Remy Chevalier of Connecticut, urged Gar to reconsider. Clare sent more information and in the end the published co-authored article was included in the "Most Under-reported News of 1994" list, for the book Project

Since he worked for ARCO, and its subsidiary APTI had the contract to build HAARP, Clare filed an internal conflict of interest statement in early 1994 so that his employers would know that he was working against a project that another arm of the company was working on.

Early in his involvement, Clare became frustrated by being unable to get what he felt were straight answers from the government about HAARP. Barbara eventually grew discouraged too. "I feel we're just like a mosquito buzzing around, treated like we're not worth paying attention to."

As it turned out, the Zickuhrs' sacrifices did play a major role - keeping the

65 Project Censored, Four Walls Eight Windows, NY 1995.

resistance alive until the NO HAARP momentum grew stronger in 1995 when the media had noted its "Project Censored" status. When Clare retired from bis job with ARCO during company cutbacks and he and Barbara sold their house to go traveling through the "lower 48", the guys in the bush carried on. It was March, 1995.

"Project HAARP is driven by fear psychology - preparation for nuclear Armageddon. That path won't lead to the next century."
David Yarrow[66]

Chapter Seven

IN THE WILDERNESS

The log home sits in a clearing in one of the small timber stands which carpet much of Alaska - the largely silent tracts of spruce called "the bush". The small house is within hailing distance of a two lane paved road. On the February day that Nick Begich and Jeane Manning visited, the remains of a moose carcass dominated the driveway.

Stepping around a snowmobile parked beside the house, the burly owner offered a warm handshake. Wally wore a National Rifle Association baseball cap, plaid flannel shirt over sweatpants, unzipped snow boots and a brief smile of welcome.

Up to this moment the two writers knew of him only as a man of diverse skills - from trucking to wildlife management - who spent up to $500 a month on phone bills to oppose HAARP.

Inside the family home, parkas and boots were shed in the kitchen, then the trio moved into a larger room. The wooden table that they settled around held a Mac computer with modem and printer. At the far end of the room, a large TV screen dominated a seating area that faced a wood burning furnace. Peeled pine logs supported the ceiling.

As he turned off the television, Wally commented on how life in the bush had changed in only twenty years. A satellite receiving dish in his backyard collected a world of communication channel signals out of the sky. He often tuned in news from an English speaking station out of Moscow, and regularly listened to radio broadcasts from Australia and New Zealand. Cabin bound months in the winter give bush dwellers time for short wave radio as well as reading, he noted. With all this and the Internet too, they could become better informed than some city dwellers. However, he did not find all the news reassuring.

He paced nervously on wool-stockinged feet and then suggested his guests climb into his four wheel drive truck for a drive to the HAARP site near Gakona. On the way they could ask him questions.

Wally recalled how he had stumbled into the HAARP controversy. Through forestry fire-fighting courses he had previously known one of the other protesters from the bush country, whom he referred to as Ed. Wally recognized the man's name under letters to the local newspaper, the Copper River Journal and to the Anchorage Daily News.

66 David Yarrow, authnor of Raturn of the Dragon: Hazards of Made-Made Magnetism. Albany.NY.

Of most concern to these local activists were HAARP documents that clearly stated the project was intended to find out how the ionosphere could be exploited for military purposes. It was not pure auroral research. They were also suspicious of the HAARP environmental impact statement that said there would be no impact on climate, the ozone layer or weather.

As Wally talked about his reluctance to get involved in the NO HAARP campaign. Jeane Manning remembered a 1994 letter from a Northern homesteader who ran a mail order business she carried the letter in her pocket with the intention of phoning the writer while in the North. "...Most Alaskans are anti-environmentalist,"
Howard wrote. "It has something to do with the frontier mentality and the fact that almost all of our money comes from the oil industry and other mineral extraction." He then zeroed in on HAARP. "The E1S and various Department of the Air Force press releases have disingenuously pictured the project as a swell international research project where - in a really sappy detail - even local high school students would be free to use the facility to conduct science project research on the aurora borealis! Of course, the project is pure Star Wars, aimed at enhancing the ability to disrupt enemy communications by disturbing the ionosphere."

Two main groups opposed HAARP, he said - trappers, miners and others in the bush who rely on ham radio communications because they have no telephone service, and pilots. "I'm sure the military planners, as do most Americans, considered Alaska to be empty enough that a trapper here or there or an unlucky bird would be of minor consequence, and were perhaps surprised by the volume of local opposition."67

Wally and Nick were chatting as the vehicle bucked along into a white landscape with occasional glimpses of black asphalt ahead. The discussion returned to HAARP. Because his background included computers and government contracts, Wally had looked into getting work with APTI, which held the contract to build HAARP at that time. The effort to get the jobs went nowhere, but Wally had a look at the HAARP contract.

"I saw the site had to be 'open for inspection according to Intermediate Nuclear Defense Force Treaty or something. Saw a number of things in provisions of the contract... The way information was handled didn't add up. Everything had to go through (John) Heckscher (HAARP project manager) in Massachusetts; people here locally didn't know anything."

"The further we dug, after we had a look at the contract, we knew it was a secret project; there was hokey pokey going on that the government didn't want to disclose. There were provisions in the contract that tripped my bells. 'Contractors can't disclose if there's something injurious'...clauses like that."

Wally said he had then telephoned two men who publicly opposed HAARP. Clare Zickuhr, who was at the time still an accountant with ARCO in Anchorage, told

67 The "guys in the bush" have been given pseudonyms in this book, at the suggestion of three of them who are concerned about keeping low profiles in their communities.

Wally that for environmental reasons Clare wanted to see the site shut down. Ed agreed and added that as a ham operator he had concerns about whether the high power RF beaming would interfere with life-and-death situations in the bush.

"Ed prodded me into doing computer searches on the Internet - go into the Library of Congress and different databases. As soon as I started looking stuff up, that was all she wrote. Eventually some of us formed a network."

Some of the people were concerned about possible military applications of a technology that could knock out the Internet or blackout the power grid. More close at hand, they figured, what goes up must come down, especially if the radiations bounce off the ionosphere. Wally worried when he heard talk of the HAARP technicians planning to install filters on the radio and satellite receiving dishes in and around every home in the vicinity. The filters would screen out incoming radio wave interference, he was told. He got together with an electronics whiz who lived on an even more remote homestead, to study the proposal for high power beaming. Concerned about their families' health, they came to a conclusion. "It's not innocuous."

Nor was the proposed violation of Earth's atmospheric electrical system, he said. "You read about a tremendous heated plume rising, and raising part of the upper atmosphere with it, and that it could change weather conditions and that the actual effects can be intensified. Then (HAARP spokesmen) come back and say 'don't worry'."

He did worry - about his family on the ground receiving reflected radiation, and then about swans, ducks, geese and other frequent flyers that could be fried in the intense radio frequency beam above the project site. The ionospheric heater, as the HAARP antennae were called, would beam upward in a prime corridor for migrating waterfowl.

Another of the guys in the bush worried that migrating salmon might lose their way, as they use the geomagnetic field as part of their road map for returning to spawning grounds. The magnetically- sensitive material magnetite had been found in salmon, as it had in human brains. Therefore changes in the magnetic field would be confusing, he said. A powerful ionospheric heater such as HAARP could create an artificial electromagnetic storm high above the earth.

"All we have is John Heckscher's comments that there'll be no more magnetic disturbances than what occurs naturally," Wally said skeptically.

The bush dwellers and their science advisors, on the other hand, contended that even naturally occurring disturbances, caused by solar storms, do disrupt living systems. A psychologist at the University of Alaska did a study trying to connect Alaska's high rate of suicides to disturbances from geomagnetic storms generated by the aurora borealis.68 And scientific articles about the sensitivities of living cells and nervous systems said it doesn't take strong magnetic fields to make a difference;

68 Vancouver Province newspaper, "Electric Impulse", Apr. 4, 1995

fluctuations of very weak fields can dramatically affect the cellular level of life. Leaning against the passenger side window of the truck, Nick nodded agreement with the NO HAARP researcher. His yeaTS of research had uncovered studies that proved this point.

As his pickup truck swayed in the strong gusts of snow driving wind, Wally recalled the early days of their battle. "We tried to find ways to bring it to the public's attention. But the newspapers just blocked the thing out; they didn't want to deal with it. We thought we had a good contact with (a large Alaskan newspaper), but the reporter told me the story was being quashed."

The loose network of activists tried to keep up their momentum despite the lack of publicity. "We had our meetings by conference call. Seemed like every time we turned around we were bringing up new information...Joe knew a lot about this directed weapon stuff. Ed on the other hand knew the technical end very well. He performed all the calculations on his computer and his calculations didn't jive with the reports put out by Mitre Corporation."

Wally glanced over to see if his listeners were paying attention to this part of the story. "Mitre Corporation does all the work for NSA (National Security Agency). They're NSA, owned, operated, signed sealed and delivered. Mitre corporation is the main defense communications contractor for the United States government. Another bell goes off. What are we talking about here? Satellite communications, ASAT (satellite) weapon or what?"

Members of the rural NO HAARP group researched different aspects of the puzzle, each taking a different slant. They never sat down together in the same room, but collaborated long distance. Wally met Clare Zickuhr once in Anchorage, and received copies of documents that Clare had dug out of the library. When Wally returned home to his computer, he filed "a whopping big request" for more information on HAARP.

"I thought it was going to Heckscher, but it was forwarded to Kirtland Air Force Base. When that happened, 1 remembered that Kirtland hosts the Air Force space command and it also stores atomic weapons. And they do the black (hidden budget) stuff for Los Alamos. It shocked the hell out of me that my request came back from Kirtland Air Force base. Then 1 knew this project probably has a lot of classified stuff."

Wally's brow creased in an anxious frown. "You're gut checking yourself all along the way - 'am 1 damaging national security?' Ed and I a lot of times would kick this back and forth on the phone, always second guessing what we're doing."

Despite their desire to be patriotic, he said, it always came back to a gut feeling that they were correct in opposing HAARP. So they spared no expense. Wally estimated the few individuals spent between five and ten thousand dollars on photocopying and mailings of information packets.

"The last package we did, with Clare, went to a writer in New York who was from a national environmental news service. Said he could do a good job. I drove all the way into town and sent this stuff out to him FedEx. Yeah, its' a seven or eight hour round trip. How do you determine the cost of our time?"

As he casually steered through waves of snow drifting across the road, Wally recalled the meeting which he and Ed had in the city of Fairbanks with Paul Brodeur, the author of books such as The Zapping of America. "He told us about a situation where a community put up a stand against a proposed project, but (their protest) never panned out. The people even got injunctions, but the Air Force never gave in. It was about a similar type of system, where it could be increased incrementally...He told us about the hazards involved in HAARP."

Wally abruptly steered off the road and onto a plowed driveway. The locked gate of a fence stopped the truck, and signs hung on the wire mesh warned that the three were looking at a "Controlled area. It is unlawful to enter this area without permission of the Installation Commander. Sec. 21 Internal Security Act of 1950 USC 797. While on this Installation all personnel and the property under their control are subject to search." A black "No Trespassing" sign hung beside one of the warnings.

The trio jumped out of the truck to survey the site from which antennae would zap the upper reaches of the sky with more power than the human race had previously been able to throw. Beyond a line of spruce, a box like building, appearing to be about the size of an industrial warehouse or grain elevator, loomed between them and the gravel pad base for the antennae. Manning remembered that Clare Zickuhr once came up with a melodramatic name for this innocuous appearing installation - the Monster in the Wilderness. She also recalled that a scientist from Princeton, New Jersey, Dr. Richard Williams of the David Samoff research laboratory, coined a simpler name for HAARP type ionospheric heaters - skybusters. He said high energy experiments pose a danger to the upper atmosphere and could cause irreversible damage in a short time. Effects could spread around the globe. "What we do know," the physicist had added, "is that secrecy always lowers the standards of environmental accountability."

In the cautious manner of a scientist, Williams had taken his concerns to me journal Physics and Society instead of to the mass media. An equally polite reply printed in the next issue came from Caroline Herzenberg of Argonne National Laboratory who wrote as a private individual, in 1988 and again in April of 1994. She warned that the advanced type of ionospheric heater could be used as a weapons system, and its use might violate the Environmental Modification Convention ratified by the United States in 1979. The atmosphere, ionosphere and near-Earth space are included in the convention. Herzenberg called on the physics community to closely critique the HAARP technology. The analysis hasn't been done.

Manning shot a photograph of Nick shivering in the February wind, but Wally did not want to be photographed. They joked half-heartedly about climbing

over the fence and getting arrested. Clambering back into the cab of the pickup felt like a better idea.

On the drive back, Wally said he doubted if there would be the vaunted economic benefits to locals, from money spent by contractors who come in to complete the site. "It's a short term deal - one summer, two summers and the construction jobs are out of here, We were sold a bill of goods; they said there would be u lot of spinoffs. Visiting scientists. But in the contract it states that this facility is built to be remotely operated. 'Remotely operated'? The only person that's going to make out here is the fuel oil dealer, from the millions of gallons of fuel that'll be burnt there. They sold us a lot of bullshit."

There were long silences on the ride back, as if all three were reflecting on how down to earth concerns of life in the Alaskan bush contrasted with the multi-gigawatt beam which will rise from that desolate site. The high energy beam could have global consequences, according to a few independent scientists.

As if sensing that his companions in the wind buffeted truck needed a hearty laugh, Nick told about a telephone call from a reporter for a major newspaper who had heard that Nick was researching HAARP. "(The reporter) said he had talked to the people at E-Systems (the defense-contracting corporation that bought APTI), and they had heard there were rumors in Alaska about black helicopters and aliens and
black cars harassing people...guys being beat up by men in black! I said 'You know, it's funny you would hear those rumors in Washington, D.C., when I've never heard any of that in Alaska. And I live here.

'I laughed at him; I wasn't going to feed into that."

Nick shrugged off the memory of the reporter's attempts to elicit rural paranoia to quote. "He was playing games, when I look back on it."

When the reporter's article was printed, the Alaskan researchers were outraged to see what the leading sentences said;

"The rumors are buzzing across the Internet that a Pentagon physics experiment on a wind whipped tract of U.S. Air Force land in Alaska has a secret purpose - digging up bodies of UFO Aliens. Another rumor has it that men in black suits...are jumping out of a black sedan to beat up Alaskan opponents of the project. Countering these odd speculations is all in a day's work for Ramy Shanny,.."69

Playing games. The phrase stuck in Manning's mind. Is that what defense contractors and the military public relations men are doing? The PR man tells a reporter that nah, we aren't going to do any ambitious tests on the upper atmosphere, Just some megawatt stuff. If the reporter digs a bit farther, however, he or she would find a paper from Penn State, for example, It shows a graph of the hierarchy of thresholds that increasing input of radio frequency (RF) power makes in the ionosphere. Heating comes first, then "parametric instabilities and stimulated electromagnetic radiation". Pump in more RF power and you accelerate electrons until

69 John Mintz, "Pentagon Fights Secret Scenario Speculation Over Alaska Antennas", Washington Post, Apr, 17, 1995, A3.

the air glows. The next threshold is "shock fronts and stimulated ionization". The Penn State experimenters proudly say they don't know what will happen when the new super powerful HAARP instrument drives the effects past a new threshold.

* * *

When the trio returned to Wally's home, his wife sat on the sofa with the weary look of a school teacher resting after a day in the classroom. Three teenagers came in and joined her in front of a TV newscast.

While Nick telephoned the local newspaper editor to ask for a photo of the HAARP site, Jeane asked Wally if the project was still controversial among local residents. He replied that many of his neighbors scattered through the Copper River Valley had attended public meetings earlier. "They came forward one after another saying they were concerned. Then later (the HAARP organizers) came out and said they'd addressed all of the concerns, and started building the project. People still feel powerless."

They half listened to Nick's conversation. Apparently the local editor was quite impressed with what charming gentlemen the HAARP manager and his associates were.

Wally rummaged through books on the table and found one, written in 1993 by science journalist Bill Sweetman70, which one of the guys in the bush had passed on to him. Wally pointed to a section about a strange how to lie manual, and read aloud:

"The U.S. Air Force's credibility is further undermined by the fact that the Department of Defense explicitly authorizes the dissemination of misleading information in order to protect classified programs. In a supplement to the National Industrial Security Program manual, released in draft form in March, 1992, the DoD told contractors how to draft cover stories that 'must be believable and cannot reveal any information regarding the true nature of the contract'."

Wally pointed out that the next paragraph contained a comment by Steven Aftergood of the Federation of American Scientists. "Once we know that the DoD practices this type of deception, it becomes harder to discern what's for real and what is not."71

Snapping the book shut, Wally said he was already suspicious of certain individuals who leave messages on Internet files as if planting them for the gullible, and he distrusted Department of Defense public relations releases. Aftergood's comments only confirmed his gut feelings. What can a guy trust?

Outside the window, the wind hammered at the log walls. The farewells were brief.

70 Bill Sweetman. Aurora: The Pentagon's Secret Hypersonic Skyplane. Motor Books Internationa!, WI 1993.

71 Ibid.

"I think HAARP could be a disaster."
Phillip S. Callahan, Ph.D.

PART TWO

SCIENTISTS ARE CONCERNED

"Some of these (electromagnetic) emissions may be reaping irreparable damage to the ionosphere and earth, which threatens our very existence."
Dr. Elizabeth Rauscher, Particle Physicist

Chapter Eight

WHO CAN STOP THE BIG ZAPPER?
Independent scientists seek 'return to sanity'

William van Bise of Nevada is a scientist who is passionate about the safety of his children and grandchildren, and he can't understand why some high level military planners seemingly are not. According to documents about the HAARP, the military's disrespect for dynamic natural systems hasn't changed much in the decades since nuclear bombs were the favored research tool for studying Earth's geomagnetic field.

Van Bise, an electronics and biomedical engineer, says bluntly "They're suicidal!" He made the comment after reading about HAARP, the military's plan to pump unprecedented levels of radio frequency power up through the upper atmosphere to heat parts of the unpredictable ionosphere. His concern is that the experimenters admit they do not know what the outcome might be.72

Surprisingly few scientists know about ionospheric heaters. "Why in the world would anyone want to heat up the ionosphere? It's already hot enough," said one head of a large university's physics department. Co-author Manning gave him the benefit of the doubt, but as it turned out, he was not joking. Other department heads at universities with sizable atmospheric physics departments had heard about ionospheric heaters but said their knowledge of the research was vague.

The University of Alaska's geophysical department knows what an ionospheric research instrument is, because their university is directly involved in HAARP funding. But although "auroral research" involvement of the University of Alaska is played up in press releases, HAARP's internal documents say the goal of the experiments is to control ionospheric processes so that they can be exploited by the Department of Defense.

Concerned scientists such as van Bise are doubly discouraged, because the people who want to control the electrojet or make "nuclear-sized explosions"73 or an "artificial cyclotron"74 in the upper atmosphere are the most difficult to stop. Traditionally they have held the biggest handfuls of taxpayers' money. Their power base includes mega-corporation defense contractors and their lobbyists. Few physicists are willing to risk their livelihood (government contracts) by contradicting these people.

72 Telephone conversations Between William van Bise and co-author of Angels Don't Play This HAARP Jeane Manning, May 1995.
73 U.S. Patent No. 4,873,928 "Nuclear-sized Explosions without Radiation".
74 U.S. Patent No. 4,712,155, "Method and Apparatus for Creating an Artificial Electron Cyclotron", among patents assigned to APTI.

WHISTLE-BLOWERS

Elizabeth Rauscher has a Ph.D., a long and impressive career in high energy physics, and has been published in prestigious science journals and books.75 Yet her warnings apparently go unheeded. For example, in 1984 she presented scientific findings at a Pentagon briefing and then tried to address the colonels and generals person to person about global environmental issues. They refused to respond to her blunt question, "Don't you worry about your children and grandkids?"

Seven years ago Rauscher and her partner William van Bise wrote a paper76 that discussed the earth's magnetic field emanations in technical language, but ended with a strongly worded warning.

Earth and life forms on it vibrate and resonate in harmony, they noted; radiant energy from the sun and materials and vibrations of the earth support life. "Is there a symbiosis between the earth and the life forms upon it?" After mentioning chemical and radioactive pollution of our life support systems, they injected a less-publicized concern, "some of the electromagnetic waves generated by man may have global significance..."

DAMAGE TO IONOSPHERE

The paper had discussed natural sources of electromagnetic waves such as Earth's mechanical rotation, earthquake and volcanic activities, solar wind and solar "broadband noise activity". Manmade sources, the two experts said, are disturbing the harmony. "Some of these emissions may be reaping irreparable damage to the ionosphere and earth which, in turn, threatens our very existence."

Societies and nations must examine what we are doing and develop a new awareness, the two scientists warned, or destruction of life will inevitably result. As if predicting the goals of HAARP, they noted that most recent technologies have been aimed at shielding people from nature - "to 'conquer' and control her, while designing ever more dangerous weapons systems with which to more efficiently strip all life from the planet."

Rauscher and van Bise ended the paper with a suggestion that society examine why we have moved toward such insane motivation, and then go forward to again pursue mutual life enhancement and sanity.

75 Relevant publications include, "Application of Soliton Physics to Plasma-MHD and Superconductivity -BCS: Theoretical Implications for Primary Energy" report prepared for Primary Energy Technology LA; "Ambient Electromagnetic Fields as Possible Seismic and Volcanic Precursors', by W.L., Van Bise and E.A. Rauscher, in Electromagnetic Phenomena Related to Earthquake Prediction edited by M. Hayakawa and Y Fujinawa, Terra Scientific Publishing Co. Tokyo; "ELF Signatures Arising from Space Vehicle Disturbances of the Ionosphere" by E.A. Rauscher and W.L. Van Bise, unpublished paper from Electromagnetic Signal Laboratory, Golden

76 "Fundamental Excitatory Modes of the Earth and Earth-Ionosphere Resonant Cavity" by Dr. Elizabeth A. Rauscher and William L. Van Bise of Technic Research Laboratories, Reno, Nevada, article published in The Proceedings of the 1988 International Tesla Symposium.

BUBBLE OF ELECTRIC PARTICLES

In May of 1995 Dr. Rauscher was asked to comment specifically on HAARP. "You're pumping tremendous energy into an extremely delicate molecular configuration that comprises these multi-layers we call the ionosphere," she replied. The ionosphere is prone to catalytic reactions. In other words, she explained, if a small part is changed, a major change in the ionosphere can happen.77

In describing the ionosphere as a delicately balanced system, Dr. Rauscher shared her mental picture of it - a soap bubble like sphere surrounding Earth's atmosphere, with movements swirling over the surface of the bubble.

"If you've ever watched a large bubble closely, you see these rainbow-like patterns flowing over it. Then you see a black spot where the wavelengths of light are so short that they can't show the bubble. But it hasn't burst yet. Then a hole forms, and then it pops."

Project planners who experiment with the ionosphere do not agree with her model of what could happen, Rauscher said. "But I strongly believe the ionosphere works that way."

When human activities make massive holes in the real ionosphere, the holes at the north and south poles migrate just like the shapes on the bubble. This is how a dramatic loss of the ozone layer happens to appear over Australia, for example. There have even been sun watches (ozone-hole watches) over high altitude states such as Nevada, where Rauscher and Van Bise live.

"(Decision makers) know the cause - the SST (supersonic transport) and the space shuttle and its Russian equivalent. I have the Russian report that calculates how many space shuttles it will take to destroy the ionosphere."

In a corresponding situation at a lower altitude, while anyone who ever used a spray propellant is made to feel guilty about holes in the ozone layer, scientists continue to send up rockets and launch satellites to study the ozone layer! Each bum of rocket fuel destroys another part of a percent of the ozone layer.

BRAGGING ABOUT PUNCTURES

Returning to the higher altitudes, we see that science journals in the early 1980's reported openly on the ionospheric disruption caused by scientists themselves. But how many outside of their specialty read papers on topics such as the High-Energy Astrophysical Observatories (HEAO) Hole in the lonosphere78. The launch of one of NASA's High-Energy Astrophysical Observatories, on Sept. 20, 1979, for example, by an Atlas-Centaur rocket "produced an extraordinary opportunity to monitor a large scale, artificially induced depletion of the earth'

77 Jeane Manning's May 1995 interviews with Dr. Elizabeth Rauscher and William van Btse.
78 Michael Mendilio, Donald Rote and Paul Bernhardt, "Preliminary Report on the HEAO Hole in the Ionosphere" The American Geophysical Union, 1980.

ionosphere" the scientists exulted. They were being paid to study the impact of repeated rocket exhaust activity in the ionosphere. Data showed the "HEAO hole followed the rocket's ground track, extending at least 2,000 km - and probably 3,000 km - to the east of Cape Canaveral. It's north-south extent spanned 600 to 1,000 km, and thus the overall disturbed region totaled 1 to 3 million km in effective surface area." For about three hours the depleted area centered on the rocket's path, then moved northward. Within hours, evidence of the hole disappeared from the "affected region".

SLICING THE IONOSPHERE

David Yarrow of Albany, New York, is a researcher with a background in electronics, and has spent countless hours exchanging ideas with physicist Dr. Daniel Winter, now of Waynesville, North Carolina. Yarrow puts Winter's insights into simpler terms - "Dan Winter...explained HAARP high frequency emissions can couple (heterodyne, in technical terms) with longwave (low frequency, or ELF) pulses the Earth grid uses to distribute information as vibrations to synchronize dances of life in the biosphere. Dan terms this geomagnetic action 'Earth's information bloodstream'. Likely, coupling of HAARP HF (high-frequency) with natural ELF (extremely low frequency) can cause a dimension of unplanned, unsuspected side effects."

In his own words, David Yarrow described possible interactions of HAARP radiations with the ionosphere and Earth's magnetic grid:

"HAARP will not burn 'holes' in the ionosphere. That is a dangerous understatement of what HAARP's giant gigawatt beam will do. Earth is spinning relative to thin electric shells of the multilayer membrane of 'ionospheres' that absorb and shield Earth's surface from intense solar radiation, including charged particle storms in solar winds erupting from the sun. Earth's axial spin means that HAARP - in a burst lasting more than a few minutes - will slice through the ionosphere like a microwave knife. This produces not a 'hole', but a long tear - an incision." 79

"An acute concern here is Earth's thin shell of ionized molecular oxygen - the ozone layer..." 80

CRUDELY PLUCKING THE STRINGS

"Second concept: As Earth rotates, HAARP will slice across geomagnetic flux...a donut-shaped spool of magnetic strings - like longitude meridians (on maps). HAARP may not 'cut' these strings in Gala's magnetic mantle, but will pulse each thread with harsh, out-of-harmony high frequencies. These noisy impulses will vibrate geomagnetic flux lines, sending vibrations all through the geomagnetic web, even as a single thunderstorm's lightning flashes emit pulses felt globally by sensitive sensors. "81

79 Letter from David Yarrow to Gar Smith, Earth Island Journal, August 18, 1995,
80 ibid.
81 Ibid.

"The image comes to mind of a spider on its web. An insect lands, and the web's vibrations alert the spider to possible prey. HAARP will be a man-made microwave finger poking at the web, sending out confusing signals, if not tearing holes in the threads. "82

"Effects of this interference with symphonies of Gala's geomagnetic harp are unknown, and I suspect barely thought of. Even if thought of, the intent (of HAARP) is to learn to exploit any effects, not to play in tune to global symphonies. "83

'CORRECT' WORDS

What is the condition of the ionosphere, after the rocket scientists went ahead with 15 years of burning through it with rocket exhaust and, puny in comparison, the early generation of ionospheric heaters? Is it damaged?

Manning found that scientists dislike the word "damaged"; it's too strong, one ionospheric physicist said. "We say 'disturbed'...you know it is going to be the same as it was before. If you lose your leg, that's damage, but if it is just cut, that's not damage."

The head of his department set the tone for this attitude. Although there were ionospheric specialists on his staff, he told Manning that he has neither the interest nor the time to get too deeply involved in the topic of ionospheric heaters. "Why are you interested (in HAARP)?"

The journalist replied that she had some questions about a reported multiplying effect from the new ionospheric instrument, and the tone of his reply was amused putdown. "If you're concerned about the ionosphere over Vancouver vanishing..."

"I'm not trying to be an alarmist..."

"It sounded like it," he said.

No wonder the media doesn't push environmental topics, the reporter thought.

UNREPENTANT ALARMIST

That department head would not welcome the views of Paul Schaefer, who sounds an alarm vigorously. His degree is in electrical engineering and he spent four years building nuclear weapons. "But most of the theories that we have been taught by scientists to believe in seem to be falling apart," he says.84

82 Letter from David Yarrow to Gar Smith, Earth Island Journal, August 18,1995.
83 Ibid.
84 Letter to Jeane Manning from Paul Schaefer, Feb. 1995.

In a publication titled, "Energy and Our Earth", he synthesizes research about imbalances caused by the industrial and atomic age, especially by radiation of large numbers of tiny, high velocity particles "like very small spinning tops into our environment.These highly energetic particles radiate into the earth and its atmosphere, disrupting the natural balance, in a chain reaction fashion as they desperately seek a balance with their surroundings." Such particles accumulate in the polar region during winter. "When polar spring occurs, the repulsive effect of the sun's energy causes the entire mass of negatively charged particles to move toward
the earth, creating a hole in the ozone layer."

The unnatural levels of motion of highly energetic particles in the atmosphere and in radiation belts surrounding Earth is the villain in the weather disruptions, according to this model, which describes an Earth discharging its buildup of heat, relieving stress and regaining a balanced condition through earthquakes and volcanic action.85 Among the technologies which produce clouds of particles - unnaturally elevated in charge - are transmission lines, electronic warfare systems, command, control and communications systems for space flights and testing of Star Wars weapon systems.

'FEVERISH' EARTH

"One might compare the abnormal energetic state of the Earth and its atmosphere to a car battery which has become overcharged with the normal flow of energy jammed up, resulting in hot spots, electrical arcing, physical cracks and general turbulence as the pent-up energy tries to find some place to go."

In a second analogy, Schaefer says "Unless we desire the death of our planet, we must end the production of unstable particles which are generating the earth's fever. A first priority to prevent this disaster would be to shut down all nuclear power plants and end the testing of atomic weapons, electronic warfare and 'Star Wars'."

William van Bise and Elizabeth Rauscher note that orbiting hardware is praised as a way to study the ozone layer, but each time a space shuttle burns its way through the sky it destroys another increment of the ionosphere, just as every meteorite does. Then as if rocket exhausts have not done enough, space capsules have ejected chemicals that dramatically interact with charged particles.

"They light up the aurora borealis (artificially), but when they light it up completely is when they kill off the ionospheric layers."

Meanwhile, the military builds its biggest ionospheric heater yet, to deliberately create more instabilities in a huge plasma layer - the ionosphere - and to rev up the energy level of charged particles.

85 Information from Paul Schaefer, Kansas City, MO 64110.

"We can artificially influence the earth's aurora with a relatively small amount of energy, and we know that outbursts of the northern lights do change weather patterns." Gary Lockhart, author of The Weather Companion86

"If the ionosphere is greatly disturbed, the atmosphere below is subsequently disturbed."
Charles A. Yost87

Chapter Nine

TESLA'S WEATHER APPRENTICES

Archimedes (287-212 B.C.) started a Long tradition of ambitious engineers who want to make their mark on the world. "Give me a long enough lever and a place to stand on and I will move the Earth," Archimedes said. Fortunately, he never found that big a tool. More than twenty centuries later, his spirit lives on in the military's engineers. They would like to at least be able to move the upper-atmosphere jet stream, changing global weather to one country's advantage.

Is electromagnetism that tool? Two scientists from the Stanford University Radioscience Laboratory, H.C. Chang and U.S. Iman, are among the experts who offer evidence of what our technology can do to affect the sky by making waves on earth.They have published papers about electron precipitation from the magnetosphere (the outer belts of charged particles which stream toward Earth's magnetic poles) caused by man-made very low frequency electromagnetic waves.88 "These precipitated particles can produce secondary ionization, emit X-rays, and cause significant perturbation in the lower ionosphere."

In 1974 Dr. Robert Helliwell and John Katsufrakis of Stanford University's radio science laboratory showed that very low frequency radio waves can vibrate the magnetosphere. In the Antarctic, with a 20km antenna and five kiloHertz transmitter, they learned that the magnetosphere can be modulated to cause high energy particles to cascade into Earth's atmosphere. By turning the signal on or off, they could stop the flow of energetic particles.

WEATHER CONTROL

Avalanches of energy dislodged by such radio waves could hit us hard. "The theoretical implication suggested by their work is that global weather control can be attained by the injection of relatively small 'signals' into the Van Allen belts (radiation belts around Earth) - something like a super-transistor effect," said Frederic Jueneman. The columnist for Industrial Research magazine speculated further, "If Tesla's resonance effects, as shown by the Stanford team, can control enormous

86 Gary Lockhart. "Ancient Ham Making". The Weather Companion, p. 199, Wiley & Sons Inc. NY.
87 Charles A. Yost, "Electrical Forces Applied to Basic Weather Phenomena", paper presented at 1992 International Aerospace and Ground Conference on Lightning and Static Electricity.
88 H.C. Chang and U.S.Iman, "Quasi-Relativistic Electron Precipitation due to Interactions with Coherent VLF Waves in the Magnetosphere" Journal of Geophysical Research, Jan. 1, 1983.

energies by minuscule triggering signals, then by an extension of this principle we should be able to affect the field environment of the very stars in the sky...With godlike arrogance, we someday may yet direct the stars in their courses."89

The question is will that knowledge be used by war-oriented or biosphere-oriented scientists?

A 1977 editorial in Saturday Review warned about weather warfare and called it a moral issue, saying "If the world is in for a long spell of crippling weather, then we are fools and monsters if we don't get together for the purpose of mounting a response as though our life depended on it - as indeed it does."90

A series of weather disasters began in 1960, according to a CIA report mentioned in the editorial, but at the time climatologists couldn't look ahead and see that droughts, floods and abnormal temperatures would continue beyond that decade. As if natural disasters weren't bad enough, the CIA reported that national governments were already able to manipulate weather for military purposes. The editorialist had an impertinent thought: "It is difficult to read the CIA report without wondering whether some of the climatic aberrations in recent years may not have been part of military experimental programs."

Saturday Review's 1977 editorial used strong words to describe the desensitization of the public and decision makers - a deadening of moral indignation that came from seeing an endless procession of super-weapons. That process was described as mass insanity. "If the collective conscience does not now respond, then all our philosophy and religion and education,..have been abstract, irrelevant, futile."

The collective conscience was silent, however, and by 1995 the military has had another 18 years to work on weather warfare methods, which it euphemistically calls weather modification. For example, rainmaking technology was taken for a few test rides in Vietnam. The DoD sampled lightning and hurricane-manipulation studies in Project Skyfire and Project Stormfury. And they looked at some complicated technologies that would give big effects. Lowell Ponte, author of The Cooling, says the military studied both lasers and chemicals which they figured could damage the ozone layer over an enemy. Looking at ways to cause earthquakes, as well as to detect them, was part of the project code named Prime Argus, decades ago. The money for that came from the Defense Advanced Research Projects Agency (DARPA, now under the acronym ARPA.)

In 1993 Air Force Chief of staff General Merrill McPeak told a meeting of the U.S. Space Foundation that those opposing a larger military role in space must reconsider their viewpoint. He emphasized that the country must develop new systems so that it can control the space environment in the future. He and other Air Force officials wouldn't say what they had in mind, but said that new systems are more of a political question than a technological challenge.91

89 Frederic Jueneman, industrial Research magazine Feb. 1974, quoted by Margaret Cheney, Tesla: Man Out of Time, p. 287.

90 "Weather Modification", unsigned editorial, Saturday Review 2 5 77, p, 4.

91 Neff Hudson an Andrew Lawler, "USAF Chief Calls for Space Defense Upgrades", Space News Apr. 19-25 1993.

The next year the Air Force revealed a bit more - its Spacecast 2020 master plan includes weather control as a possible new weapons initiative. Defense News excerpted the report. Under "weather control", the article said that scientists have experimented with weather control since the 1940's, but Spacecast 2020 noted that "using environmental modification techniques to destroy, damage or injure another state are prohibited". Having said that, the Air Force claimed that advances in technology "compels a reexamination of this sensitive and potentially risky topic."92

What could the new technology do? For one, military forces may have the tool for zapping a hole through a cloud in order to target their enemy. That would be costly and risky, but "the potential benefits for national security could be even higher".

Air Force officials said the weather control section of their report is classified and won't be released.

40 YEARS OF ZAPPING THE SKY?

As far back as 1958, the chief White House advisor on weather modification, Captain Howard T. Orville, said the U.S. DoD was studying "ways to manipulate the charges of the earth and sky and so affect the weather" by using an electronic beam to ionize or deionize the atmosphere over a given area.93

In 1966, Professor Gordon J. F. MacDonald, associate director of the Institute of Geophysics and Planetary Physics at the University of California, Los Angeles, was a member of the President's Science Advisory Committee, and later a member of the President's Council on Environmental Quality. He published papers on the use of environmental control technologies for military purposes. MacDonald made a revealing comment:

"The key to geophysical warfare is the identification of environmental instabilities to which the addition of a small amount of energy would release vastly greater amounts of energy. "94

MacDonald had a number of ideas for using the environment as a weapon system and he contributed to what was, at the time, the dream of a futurist. When he wrote his chapter, "How To Wreck The Environment", for the book Unless Peace Comes.95 he was not kidding around. In the text he describes the use of weather manipulation, climate modification, polar ice cap melting or destabilization, ozone depletion techniques, earthquake engineering, ocean wave control and brain wave manipulation utilizing the planet's energy fields. He also said that these types of

92 "Air Force Space Master Plan Envisions Weather Control", Defense News, Sept 26-Oct. 2, 1994.
93 Between Two Ages: America's Role in the Technetronic Era, by Zbigniew Brzezinski, Penguin Books, Mass. 1976.
94 Unless Peace Comes. A Scientific Forecast of New Weapons. Edited By Nigel Calder, Geophysical Warfare, How to Wreak the Environment by Gordon J. F. MacDonald, pges 181-205, 1968. (provided by: International Committee for The Convention Against Offensive Microwave Weapons)
95 Ibid.

weapons would be developed and, when used, would be virtually undetectable by their victims. He was not some wire haired fanatic when he made these observations in 1966 - he had the credentials of a world recognized scientist. What his futuristic concepts became, are the things which projects like HAARP are made of...

U.S. Congress' subcommittee hearings on Oceans and International Environment looked into military weather and climate modification conducted in the early 1970's. "What emerged was an awesome picture of far ranging research and experimentation by the DoD into ways environmental tampering could be used as a weapon," said Lowell Ponte.96

The revealed secrets surprised legislators. Would an inquiry into the state of the art of electromagnetic manipulation surprise lawmakers today? They may find out that technologies developed out of the HAARP experiments in Alaska could deliver
on Gordon MacDonald's vision, because leading edge scientists are describing global weather as not only air pressure and thermal systems, but also as an electrical system.

'SMALL INPUT, BIG EFFECT'

A point to remember is that the ionosphere is an active electrical shield protecting the planet from the constant bombardment of high-energy particles from space. This conducting plasma, along with Earth's magnetic field, traps the electrical plasma of space and holds it back from going directly to the earth's surface, says Charles Yost of Dynamic Systems, Leicester, North Carolina. HAARP zaps the ionosphere where it is relatively unstable.

"If the ionosphere is greatly disturbed, the atmosphere below is subsequently disturbed. "97

It is reasonable to expect Earth's relatively thin atmosphere of insulating gas (water vapor) to be mechanically pushed and pulled by the surrounding electrical forces, Yost says. Electrical currents in the ionosphere are said to be 100 times larger than those produced lower down at any moment by all the world's thunderstorms. Yost concludes that electrical forces should be included along with thermodynamics, gravity waves and effects of Earth's rotation, as causes of weather variations. According to his experiments and analyses, ionospheric currents and changing magnetic fields in the ionosphere must produce "global oscillating gradients" that go down as far as the ground.

A connection between manmade electromagnetic forces and the weather showed up in a paper Yost wrote about lightning and earth harmonics. The apparent global interaction of electrical storms prompted Yost to take another look at how clouds form. He found that electrostatic forces can influence the dynamics of cumulus clouds. On a copy of his paper that Yost sent to Jeane Manning, he wrote "man can make these levels of force artificially".

96 The Cooling, by Lowell Ponte. Prentice-Hall inc. NJ 1976.
97 Charles A. Yost, "Electrical Forces Applied to Basic Weather Phenomena", Proceedings of the 1992 International Aerospace and Ground Conference on Lightning and Static Electricity, Atlantic City, 1992. Document available through Nat'l Technical Information Service, Springfield, Virginia, 22161.

In its early stages, a currtulo nimbus cloud's transition layer is in a delicately balanced condition of pressure, temperature and water vapor content, according to Yost, "such that minor change triggers condensation. A radiation particle, a localized electric field transient or a slight local thermal disturbance might trigger the change of state," Yost said.

The first two factors may help explain strange extremes of weather over industrialized/electrified/atomic-powered North America. For one thing, the unnatural 60 hz electromagnetic fluctuations from a dense web of powerlines have entrained the vibrations of the ionosphere in some places. Again, Tesla's favorite phenomenon - resonance - explains how a relatively small force can have large effects.

Dr. Robert O. Becker explains how one man-made electrical effect - power line harmonic resonance - causes fallout of charged particles from the Van Allen (radiation) belts, and how the falling ions cause ice crystals (which precipitate rain clouds).98

What about HAARP? Energy blasted upward from an ionospheric heater is not much compared to the total in the ionosphere, but HAARP documents admit that thousandfold greater amounts of energy can be released in the ionosphere than injected. As with MacDonald's "key to geophysical warfare", "nonlinear" effects (described in the literature about the ionospheric heater) mean small input and large output.

At a 1983 science conference in Atlanta, one of the presentations held clues about where engineers and physicists were heading with that small input/ large output goal.99 E.E. Richards talked about the above mentioned Stanford University experiment in beaming VLF radio waves to the magnetosphere. The signals followed the curves of the magnetic field and swung back to Earth. They were detected halfway around the world away from their origin in California. In some cases the signals were amplified a thousand times.

What strengthens these radio signals a thousandfold? According to Richards' research, the signals gather energy from electrons within the Van Allen radiation belts which surround Earth's atmosphere. Each time one of the world's fifty or so VLF (3 to 30 KHz) transmitters sends out its signal; streams of excited particles from the outermost regions of the magnetosphere cascade into our atmosphere. "Even low frequency (LF: 30-300 KHz) radio waves leak into the upper layers, causing this same phenomenon. The injection of small signals into the energy belts creates something like a super-transistor effect, altering the motion of free electrons thousands of miles out from the earth's surface. This Tesla Magnifying Resonance effect can control enormous energies by minuscule triggering signals." As did Nikola Tesla, Richards works with the principle of resonance.

98 Hobert O. BecKer, The Body Electric, William Morrow NY 1985.
99 E.E. Richards, "Earth Power Spectrum", Proceedings, The Second International Symposium on Non-Conventional Energy Technology, p. 136, Cadake Publishing, PO Box 1490, Clayton, Georgia 30525.

In a recent interview[100], Richards explained the super-transistor effect which others also describe as an avalanche of electrons. At certain frequencies and at a certain energetic threshold, there is a large energy transfer between levels in the upper atmosphere.

EFFECTS REACH THE GROUND

How far down from the magnetosphere or ionosphere through the atmosphere can such an "avalanche" come? Surprisingly, in various locations Richards found effects reaching the earth. The first time he saw this recorded on scientific instruments, he was living at 8,000 feet above sea level in central-west New Mexico where the air was clear and electromagnetically quiet. That day there was
a large buildup of electrical energy in the atmosphere very close to the surface of the earth, but not a thunderstorm condition. As the non-lightning electrical condition passed through the area, Richards and his associates monitored surprisingly large oscillations (vibrations) on their antennae array and learned at what frequencies the local atmosphere readily vibrates. The vibrations charged capacitors (energy storage units) to a rather high voltage.

One quiet March day while monitoring the Russian and American ELF transmissions, they tried running an antenna array (twisted wires) a mile along the ground, and received unexpectedly strong and continuous signals. Briefly, the findings and further monitoring were a springboard for discovering correlations with harmonic interactions between the planets. They also learned how nature handles the influx of cosmic energy towards earth's surface through the auroral vibrations. The researchers saw how energies could be stored within the magnetosphere, and "we have a mechanism, confirming Tesla, for drawing this energy into the lower atmospheric cavity."

'COUPLING' BETWEEN IONOSPHERE AND WEATHER

While Richards' interest in their work was to find a usable clean- energy source for the inhabitants of Earth, physicists at Stanford University worked on a government funded project. They wanted to amplify waves in the magnetosphere for the goal of global communication at lower frequencies.101

The authors of this book have a different aim - to understand the ramifications of the high-level experiments. Could it affect our weather? The atmospheric physicists we have spoken to are vague in their answers.

The paper by Richards gives strong clues. Recent scientific evidence suggests that strong electrical coupling exists between the ionosphere and lower atmosphere, he said. Large scale horizontal electric fields move down from the magnetosphere and ionosphere, with little loss of amplitude, to around ten kilometers above the earth, he said, "The total potential voltage drop across regions like the polar caps and the auroral ionosphere can be a significant fraction of the average ionospheric potential with respect to the earth..."

100 E.E. Richards, conversation with Jeane Manning, May 1995,

101 "VLF: Getting Panicles Excited," Science News, Dec, 18 and 25, 1982, pg. 392.

What this means to us is that there is a powerful electrical connection between the ionosphere and the part of the atmosphere where our weather comes onstage, the lower atmosphere. Furthermore, scientific theories describe how the electrical energetic levels of the atmosphere are connected to cloud processes. 102

E.E. Richards reported the following conclusions from his search of the literature. "The conducting ionosphere can affect the instability by short circuiting the electrostatic part of the earth electric field, thus requiring less energy to release charge from the upper layers. These auroral arcs result in an acceleration process called ring currents, precessing along the magnetic field lines that connect the magnetotail with the ionosphere. This is the primary supply of energy for the auroras..."

He explains how electrostatic waves stimulate the ionosphere, allowing the powerful radiations described above to flow in from space. He adds that observations from satellites and from the ground tend to confirm Nikola Tesla's claims about his Colorado Springs experiments. "With his oscillator he was able to stimulate the ionosphere through high voltage, and then allow the cascading of the upper layer currents, thereby simulating the natural action of the aurora and also of lightning."

Tesla was one of several inventors cited by E.E. Richards who were on the path to using the "abundant energy source that surrounds us each minute". Humanity lives within the cosmically stimulated bubble of the magnetosphere, Richards said, and upon the twirling spherical generator that is the earth. In the spirit of previous generations of scientists called natural philosophers, he is awed by the beauty of the system. In our experience, this appreciation of the processes of the universe often comes to independent researchers who aim to work in harmony with nature. In other words, resonance seems a gentler way to transfer power than direct zapping.

The weather can be changed using electrostatics. A discovery allowing the manipulation of weather was made by Elate Intelligent Technologies, Incorporated, a small Russian company. They found a way to fine tune weather patterns over a 200 mile range. The "system consists of dozens of aerials, each 25 feet tall, that discharge electrical energy upward to react with ions in the air". 103 These aerials are connected to a computer system and power supply which is controlled by an operator to create the desired effects.

Lev Pokhmelnykh is the company founder and a respected physicist, specializing in "electrostatics". Pokhmelnykh demonstrated the system for the Wall Street Journal reporter with startling results. He used the system to clear clouds in an otherwise dreary day. The technology points out how little we know about such effects and the way weather can be manipulated by people.

102 Ralph Markson and Michael Muir, "Solar Wind Control of the Earth's Electrical Field", Science, May 30, 1980, Vol. 208 No. 4447.

103 Adi Ignatius, "Rain, Rain, Go Away, Go Soak Someone Less Willing to Pay; Moscow Firm Offers 'Weather Made to Order'; Our Man Requests Three Days", The Wall Street Journal, October 2, 1992, pg. A1 & A11.

There was another unexpected discovery of an atmospheric phenomenon in 1993. It was found that the Earth's lower atmosphere contains "rivers of water vapor rivaling the Amazon in the massiveness of their flow". 104 Reginald E. Newell of the Massachusetts Institute of Technology reported that these vapor rivers were the main mechanism for moving water from the equatorial regions of the earth to the poles. However, he did not expect to find that the water vapor was contained in narrow bands which are 420 to 480 miles wide and up to 4,800 miles long. These bands are about 1.9 miles above the earth, and have flow volumes of 165 million kilograms of water per second. The observers found that there are five atmospheric rivers in the Northern Hemisphere and five in the Southern Hemisphere, each with these typical flow rates.

We speculate that if HAARP were located at the right place, it could be used to deflect these flows in a way that alter weather patterns. This is another concern which should be considered in the operation of HAARP - a fact not known before HAARP was planned.

BEAMING ABOUT TESLA'S ELECTRIC GUN

Weapons-oriented researchers, on the other hand, are quite interested in other, more invasive, aspects of Tesla's knowledge besides resonance, such as the "explosive channelization of air" which he is said to have learned about this phenomena as he injected successive pulses of energy along the same channel, According to Dr. J.F.X.Daum, Ken Corum and Dr. James Corum, Teste experimented with atmospheric tunneling. By the 3930's Teste had invented a "channelized beam composed of a coherent burst of electrically charged material particles" moving as fast as the speed of light. The three scientists calculated that such a particle beam would easily pierce armored vehicles.105

COULD THEY SHORT CIRCUIT EARTH?

Earth as a spherical electrical system is a fairly well accepted model. However, those experimenters who want to make unnatural power connections between parts of this system might not be thinking of possible consequences. Electrical motors and generators can be caused to wobble when their circuits are affected. Could human activities cause a significant change in a planet's electrical circuit or electrical field? A quote plucked from a lengthy paper in the respected journal Science deals with manmade ionization from radioactive material, but perhaps it could also be studied with HAARP-type skybusters in mind:

"For example, while changes in the earth's electric field resulting f,om a solar flare modulating conductivity may have only a barely detectable effect on meteorology, the situation may be different in regard to electric field changes caused by manmade ionization,,."106

104 Kathy Sawyer, "Climatology: Space Data Indicate Rivers in the Sky,", The Washington Post, Science Notebook, Jan. 25, 1993.
105 "Thoughts on Tesla's Particle Beam Technology", presentation by Or. J.F.X. Daum, Ken Corum and Dr. James Corum to International Tesla Society.
106 Ralph Markson and Michael Muir, "Solar Wind Control of the Earth's Electrical Field", Science, May 30,1980, Vol. 208 No. 4447, p. 989.

Meteorology, of course, is the study of the atmosphere and weather. Ionization is what happens when a higher level of power is zapped into atoms and knocks electrons off the atoms. The resulting charged particles are the stuff of HAARP. "One took at the weather should tell us that we are on the wrong path," says Paul Schaefer, electrical engineer, commenting on HAARP-type technologies.

An administrator of the National Oceanic and Atmospheric Administration once said, "It is not possible to draw clear distinctions between research and technological development on weather modification for hostile and non-hostile purposes."

"Our planetary environment is becoming progressively more energetic, with unusual activity, like mysterious bursts of energy that mimic radio waves from atomic explosions, being detected in the atmosphere..."
Paul Schaefer, engineer and researcher, Kansas City MO.

"The Earth is becoming a disturbed planet, and man is doing the disturbing."
Acres USA

Chapter Ten

PUTTING THE HEAT ON MOM EARTH

The journey toward understanding "Tesla technology" had taken Jeane Manning to science conferences in Germany in 1987 and Switzerland two years later.
At both meetings, she heard an American astrophysicist, Adam Trombly, give eloquent speeches on environmental issues. A protege of the late Buckminster Fuller, Trombly had founded the non-profit Project Earth through which he worked with other scientists toward understanding global ecosystems - the big picture.

In July of 1995, Manning telephoned Trombly at the Institute of Advanced Studies at Aspen, Colorado, to ask about possible effects of the HAARP-type experiments which would make artificial electromagnetic storms above the earth - experiments which would lift parts of the ionosphere and would literally expand those areas while accelerating more high energy particles in the already energetic ionosphere.

HAARP would add more energy to a global system that is already stretched, replied the scientist. By "stretched", he meant hyperstimulated by particle flows from the sun. To put it into perspective, think of our planet as a somewhat wobbly dynamo motoring around a sun. Our sun is an aging star and getting unreliable, to say the least. Through telescopes, people have been eying sunspots since Galileo's time, and learned that magnetic storms above Earth and the northern lights are connected to those dark patches on the sun. In recent decades our sun has been throwing major fits
- spewing larger than usual bursts of high energy particles into our planet's systems. Some of this hyperactivity started before men got into the act with nuclear explosions. With an effect similar to solar flares, manmade Tadiation from atomic technologies adds to the crossfire of super-speedy particles in which we live.

It's difficult to tell how long the sun has been going through a hyperactive cycle, because sensitive scientific instruments to measure "coronal hole activity" on the sun are fairly new. A thorough study has only been possible in the last couple of decades. (The corona is the super-hot halo of plasma around the sun.)

Judging by the increase in the geomagnetic "noise" (disturbances in the earth's magnetic field) heard on earth, some scientists speculate that the sun may be approaching a time of change. Whether or not the sun goes through a time of

spectacular hot flashes in the near future and throws even more particles at Earth, the fact is that Earth is being affected right now.

EARTH GETS HOTTER

"Eleven years ago we were predicting ground heating," Trombly said, "...the earth actually getting hotter inductively."

(To understand what he was talking about, Manning later had to turn to a dictionary of science. Induction heating means that electrically conducting material - in this case, materials in the earth - is heated as a result of the electric current induced in it by an alternating magnetic field (due to interaction with the sun and even with the moon). She began to see how Earth's magnetic field could be in danger of breaking down and opening the way for a pole shift. Heat is an enemy to the strength of a magnet. (The fact that the earth is getting hotter was reported in the New York Times in 1991. The article said that Arctic ice had decreased by 2% in only a nine year period.) 107

Trombly was saying that before men detonated underground nuclear tests or did anything else that was massively invasive to the state of balance of Earth's systems, we were already on an unstable planet. When will Earth be electrodynamically saturated with an "energy burden" from the sun? "The system is already at near-terminal capacity in our opinion," said Trombly.

Then HAARP comes along..."a project that could further destabilize an earth that's already an unstable environment", as Trombly put it. The thought of a planet whose systems are overloaded, and which may soon reach the point where it couldn't take any more high-energy particles, was sobering. Manning thought about the enthusiastic attitude of the scientists and military contractors whom the NO HAARP group called "the big boys with the big toys". Those big time experimenters admit that they don't know what will happen when they push ionospheric heating experiments into the next level of effects. They seem to be excited about the macho adventure of passing the next "threshold of effects" in the ionosphere, and do not hesitate to pump gigawatts of power up there and intentionally accelerate particles in the ionosphere to "relativistic" speeds - nearly the speed of light. Why would they be so irresponsible?

Trombly answered in a word - denial. The decision makers are not being malicious, Trombly said; they are just refusing to face the facts about how flimsy is the web of life on Earth. "We do not want to admit that we are in a situation that is tenuous, where there are gradual (planetary) processes that are punctuated by catastrophic processes."

Specialists tend to look at their own experiments as isolated incidents, without seeing long term effects on larger systems, Trombly noted. As Manning heard him talk about lack of respect for Earth's systems, she thought about a

107 "Receding Ice on Arctic Sea Hints at Global Warming" by William K. Stevens, New York Times, July 4, 1991, pg. A11.

professor she had interviewed who was connected with HAARP. The professor's enthusiasm encompassed the possibility of HAARP creating a massive airglow in the ionosphere, and of giving his doctoral students some technical challenges so they could get their Ph.D.s.

Could their experiments set off a catastrophe? The research of the Institute for Advanced Studies looks into such questions. For example, earth monitoring with sensitive instruments revealed a connection between underground nuclear tests and earthquakes.

While nuclear explosions zap more high energy particles into our global environment, HAARP specifically gives a sharp jab to the ionosphere. Trombly is concerned about atmospheric storms "once you create a point-like stress differential... What is it going to do in terms of gating influx from particles, from the magnetosphere down?...we already have real problems with particle influx into this planet, now."

Pole Shift

The Soviets considered the impact of electromagnetic "smog" on living organisms. They concluded that because living organisms evolved under the influence of the Earth's micropulsations in the magnetic field, changes in these pulsations might alter fundamental body rhythms, including the rate that DNA replicates. From the Soviet perspective, electromagnetic pulses can influence everything from health to behavior. Russian scientists are also concerned that continued increases in electromagnetic radiations could contribute to a premature and cataclysmic reversal or position shift of Earth's poles, 108

Western scientists have noted that chemical changes occur which can account for some effects of electromagnetic pulses on living systems. James D. Hays of Columbia University found microorganism extinctions corresponding to pole reversals. He believes that, in some way, these living creatures used the magnetic fields of the earth. When the fields were altered by reversal, they died,109 This issue was also explored by one of the country's leaders in bioelectric science, Robert O. Becker, M.D. His research results also pointed to similar findings as those of the Soviets - animal extinctions.110

The possibility of electromagnetic pollution bringing changes that could cause a pole shift is alarming. However, the interrelationship of earth movement and atmospheric effects was discussed in a 1991 article.[111] It is known that Earth slows down by about 1.4 milliseconds every century, but scientists more recently discovered that this can also happen in jumps.

108 Cross. Currents, The Perils of Electropollution, The Promise of Electromedicine, by Robert O. Becker, M,D.
109 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
110 Ibid.
111 "Fitfully, the Rotation of the Earth is Slowing", by John Noble Wilford, The New York Times, August 9, 1991.

They already knew that tidal forces from the gravitational effects of the moon, sun and other astronomical bodies contribute to slowing the Earth's spin. The new discovery is that wind, polar ice melting, ocean currents and movements within the Earth's molten core are causing an increased slowing. The forces generated by atmospheric motion have the most significant impact on either speeding up or slowing down the spin rate. In the article, Dr. Jean Dickey of the Jet Propulsion Laboratory said that "Ninety percent of these variations are caused by changes in wind", when describing the shifts in atmospheric mass such as that associated with El Nino. (El Nino is a periodic change in ocean currents which have altered weather patterns.) Dr. Dickey said, "If the atmosphere is speeding up. Earth is slowing down".

The movement of atmospheric mass adds stress over new portions of the earth, and lowers stress in other parts. This shift in pressure or forces in the planet can increase earthquake frequency in all areas which experience changes in atmospherically created stresses.

This can be related to the HAARP technologies, because changing ionospheric balance might shift weather patterns that are already contributing to the planet's instabilities. How much stress is needed or created by this kind of experimentation is unknown. What is known is that the Earth is a balanced organism which is increasingly being affected by reckless experimentation, either deliberate or out of ignorance.

The idea that these kinds of weapon systems could be used for weather modification is not new. The real work leading to the area of geophysical warfare goes back to at least 1958, when the chief White House advisor on weather modification, Captain Howard T. Orville, said the Defense Department was studying "ways to manipulate the changes of the earth and sky and so affect weather" by using "an electronic beam to ionize or deionize the atmosphere over a given area." 112

As far back as 1977, scientists observed that just the location of power plant clusters could affect weather as much as could intentional injection of power into the atmosphere. They discovered that when power plants are clustered together, they alter local weather patterns. Within six to twelve miles downwind of these facilities, rainfall could increase by as much as 25 percent more than normal, and at further distances rainfall might decrease. They concluded that the changes were the result of released heat. 113 The heat energy alone released by technology can have a debilitating effect on weather patterns!

Earth's equilibrium is undergoing other disconcerting shifts. This again shows our lack of understanding of the complex processes of the planet. A New York Times article said that wave heights in the northeast Atlantic had risen by up to 20 percent since the 1960's. The reported study took more than two decades, so the effect could not be explained away by seasonal variations. 114 The article explained that

112 The Cooling, by Lowell Ponte, 1976, page 169.

113 "Cluster of Power Plants Found to Change Weather", The New York Times, June 5,1977.

114 "Puzzled Scientists Find Waves Off Britain Are Growing Larger", the New York Times, April 19, 1988, pg. C4.

these changes in wave heights could be caused by weather system changes occurring a thousand miles away. Tampering via HAARP will only exaggerate such anomalies in the upper atmosphere, and perhaps set in motion a chain reaction.

Electrical power generation and use of energy in the northeastern United States steadily increased over the same two decades. Could it be that the "downwind" effects of weather, described earlier, could be contributing to this wave height observation? Could we be reaching a new level where instabilities will tilt over some unknown threshold, thereby causing unexpected geophysical reactions?

ACUPUNCTURE POINTS

There are simpler ways to look at Mom Earth's natural electrical system. For example, Adam Trombly said the acupuncture model is relevant. "What happens when you overstimulate an acupuncture point? You can give somebody a heart attack very easily with a very low amplitude input...Hit one of those ionospheric acupuncture points in the dynamic matrix of the ionosphere as a wave guide - what is the effect going to be?"

He challenges HAARP scientists to answer a big question before they send multi-gigawatt pulses up to the ionosphere. "What are the saturation parameters for the ionosphere?"

Manning asked him about the warning implied in the book Lost Millennium by Walter and Leigh Richmond. In that novel, "advanced" technology tapped into the ionosphere successfully, until one day when the timing was unfortunate. A solar flare set off an unquenchable avalanche of electrons that traveled back down the technicians' beam and fried a planet. Could today's ionosphere modifying scientists make a similar mistake?

"That's what I'm talking about," Trombly said quietly.

Technically, he explained what could happen in an electrodynamically saturated situation. If a natural source - solar - hyperstimulates the entire system, it could cause "chaotic dissipative motions". Events in the ionosphere then could stretch way beyond the normal limits of the physics law of conservation of energy. "It doesn't mean the energy isn't ultimately conserved; it just means that the initial environment is pervaded with far more energy than we've taken into account." In order to dissipate this energy, tremendous turbulence develops in the ionosphere and the magnetosphere.

Manning pondered what she had learned at New Energy Science conferences. Does twentieth-century textbook science have an incomplete picture of what is in "empty space"? Could there be interactions with the background sea of electromagnetic radiations - perhaps from distant stars - that flickers throughout space? She recalled papers in prestigious science journals that indicate there is a lot

to learn about the energetic nature of the space that surrounds us.115, 116, 117, 118, 119

Trombiy was saying that for years Russian scientists have documented unusual effects that violate physicists' expectations - "nonlinear, nonthermodynamic effects that violate entropy, in the resonant system of the atmosphere". In the light of these discoveries of unexpected energetic effects, he raised a few more questions for the skybusting HAARP experimenters.

"Where are those energies coming from? Tell me where the point is when you reach instability! Tell me what your critical points of stress are, before you do this!"

The ionosphere exists at a certain level of "magnetoplasmadynamic order". At various levels of energy, certain gases or elements exist. If the energy level is dramatically changed, the system goes through a chaotic transition before it reconstitutes itself at another level of order. Nobel prize winner Ilya Prigogine documented this self- ordering process in chemical systems. Since then, Trombly and many others continue to observe atmospheric processes in the light of this background understanding.

Resonance - a phenomenon related to the natural frequency of each part of a system - figures strongly in Tesla technology as well as in interactions between electromagnetism and mental processes or living cells which Dr. Nick Begich researched. Regarding global systems, interconnectedness through resonance is undeniable, Trombiy said. "We have observed that, when a system is near saturation you don't know what is going to send it over the line."

LARGE-SCALE ELECTROMAGNETICS

The interconnectedness between the ionosphere and the lithosphere (earth's crust) or the ionosphere and the inner core of the earth, is partly an inductive relationship, he said. What does Trombiy mean, using an electrical term such as "inductive" in relation to layers of the earth? He admits that some "people who call themselves geophysicists would scratch their heads; they wouldn't know what I was talking about. But there plenty of other ones who are good enough with electromagnetic systems on a grand scale, who would at least stop and pause before they would do anything as stupid as send multi-gigawatt pulses into the ionosphere.

Since earthquakes are known to cause the ionosphere to react electromagnetically, Manning asked if the reverse could happen - could pulsed disturbances in the ionosphere set off earthquakes?

115 Daniel C. Cole and Harold E. Puthoff, "Extracting Energy and Heat from the Vacuum", Physical Review E, Vol. 48 No. 2, Aug. 1993.
116 Bernard Haisch, Alfonso Rueda and Harold Puthoff "Beyond E=mc2", The Sciences, November/Dec. 1994, pp 26-31.
117 Harold Puthoff, "Ground State of Hydrogen as a Zero-point-fluctuation-determined State," Phys. Rev. D, Vol. 33, No. 10, May 15, 1987 pp 3266-3269.
118 Harold Puthoff, "Source of Vacuum Electromagnetic Zero-Point Energy", Physical Review A, Vol. 40, No, 9, Nov. 1 1989, PP 4857-4862.
119 Puthoff, Harold, "Everything for Nothing", New Scientist, July 28, 1990.

He replied that he would not be so naive as just to say "yes, if they stimulate the ionosphere in this way then they're going to set off earthquakes. However, I would not be so cavalier as to say that if they happen to stimulate the ionosphere at a moment when it is already saturated, or near saturation, that they couldn't set off an event that could induce chaos - where you could end up having a kind of magnetic storming, almost a runaway event up there."

In documents the HAARP planners put together in 1990 they say that they were intentionally trying to get a "runaway" effect in the ionosphere. This effect was new and would represent an energy threshold not yet reached with these kinds of military tools. The document said "...that at the highest HF (high frequency) powers available in the West, the instabilities commonly studied are approaching (heir maximum RF (radio frequency) energy dissipative capability, beyond which the plasma processes will 'runaway' until the next limiting factor is reached."120 What will happen when this runaway event occurs?

Trombly pointed out a similarity between the decision to pulse several gigawatts into the ionosphere (HAARP) without knowing what will happen, and the first atomic weapon testing. Years afteT that test, physicist Robert Oppenheimer admitted that the scientists had not known what would happen when they set off the bomb - if the chain reaction was going to stop or keep on going. "The government knew that the scientists didn't know!"

More recently, spectrum analysis work, especially in the ultra low frequency (ULF) part of the electromagnetic spectrum, has clearly shown how non-linear the effects from underground nuclear testing were, Trombly said. (Nonlinear means having an output that is not directly proportional to the input. In other words, unexpected or unpredictable.) Scientists were completely surprised by these results - they represented many many times the expected effect.

HAARP: DANGEROUS EXPERIMENT

Manning commented that Dr. Bernard Eastlund, the inventor of an ionospheric heater technology which may be a precursor to HAARP, claims the ionospheric heater approach could change the chemistry of the ionosphere beneficially. Trombly indicated there were safer ways to increase the ozone content.

"My knee-jerk reaction is still the same," he said. "With a system as close to saturation as it is, why would 1 believe this guy when he says that by beaming this into the ionosphere we're going to be able to heal it? I also don't want to be dogmatic and say it can't work, if it is done properly. But it just doesn't seem like a wise and prudent act to me."

Trombly sounded discouraged. He and his colleagues at the non-profit Institute for Advanced Studies use any money that they get from clients for further research. However, he would consider their efforts a waste of time if the people with

120 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.

big pocketbooks aren't going to do anything constructive about the global environmental situation.

"There are very basic things we could do if we want to heal the stratosphere. We already know these things will be effective..."

Will the big money continue to go into destructive instead of constructive experiments?

"Trying to pin these guys down is
like nailing jello to the wall."

PART THREE

ELECTROPAINTINGS IN THE SKY

Chapter Eleven

THE COMPILERS

The NO HAARP group really wasn't a group in the formal sense. The independent research efforts always flowed to the "library". This was a floating set of documents which grew to more than three hundred source items. The library was periodically copied and sent to trusted "compilers" across the globe, and was also moved from one person to the next depending on who was developing the most data and had the greatest need for the information at their finger tips at a given time. It could be said that the NO HAARP members, each acting as their own independent collection points, were a living Internet. Each person could continue to operate even if some researchers dropped off the project.

The military presented a challenge to researchers in the way they handle information in weapon development projects. From the beginning of the development of the information until the writing of these words, the data on HAARP, gathered by the compilers, has continued to grow. We recognized that there would be additional information found even after the first printing of this book but it could be added later as the collection of facts had an urgency which required publication. We needed to begin to disclose the potentials of this new weapon system and the risks associated with it.

Getting information from the military presented a challenge because of the way they handle information in weapon development projects. The United States military and intelligence community work under a number of principles. These include "compartmentalization" and "need-to-know". Compartmentalization is the idea of taking a large multifaceted project and breaking it down into subparts which can be researched and devetoped independent of the others. Through compartmentalization, the concept of need-to-know develops, where only the part that each individual needs to be aware of is relayed to that person. What these two concepts allow the military is "containment". A third principle in intelligence circles. An intelligence circle keeps the project going, but in a way which masks the overall (government) plan. In the case of the HAARP project, Hanscom Air Force Base runs the public effort on the program. Kirtland Air Force Base (the home of high-tech weapons systems) runs the information distribution process, Maxwell Air Force Base develops doctrine and policy for non-lethal weapon systems and Brooks Air Force Base puts together research on the bio-effects of radiofrequency radiation. UCLA, Stanford University, Penn State, and the University of Alaska all work on the project. Lest we forget, there are also industry contributions by Atlantic Richfield Company (ARCO) through ARCO Power Technologies Incorporated (APTI), their subsidiary. E-Systems bought APTI and formed a new subsidiary called APTI. This company was then acquired by Raytheon Corporation in a huge buyout. 121 There are many other organizations connected to the project some of whom appear in the remaining chapters of this book.

121 The Wall Street Journal, "Raytheon to Acquire E-Systems For $64 a Share, or $2.3 Billion, Offer is 41% Premium Over Friday's Close; Rival Bid Is Unlikely", by Steven Lipin and Jeff Cole, page 1 column 2 and A3 column 1 and A16 column 1, Monday, April 3,1995.

The HAARP project is part of the larger work of Strategic Defense Initiative ("Star Wars") technologies, a program first brought forward during the Reagan Administration. We are also certain that many of those associated with this project are unaware of the other ways HAARP transmitters could be used. The scientists at work within the University of Alaska Fairbanks' Geophysical Institute are specialists and brilliant leaders in their fields. However, their disciplines do not cross over into the biological sciences sufficiently to consider the effects of their work on living things, nor does their work consider the uses of radiofrequency radiation contemplated by the intelligence community and within the various agencies of the United States government.

Part three considers the risks to people if these "ionospheric heaters" are misused. It explores the use of radiofrequency for mind manipulation, as a weapon system as well as those DoD applications described in the HAARP records.

The information presented throughout this book, it is hoped, will stimulate people to approach their government projects with the same healthy skepticism demonstrated by the "guys in the bush" and all of the others who contributed to this research effort. The people whose stories were told in the first section of the book are scientists, researchers and very ordinary people who had the will to cause change in the world.

This part of the book is the work of the "compilers" in weaving together the tapestry of information developed over what has become years of effort on the part of many, This is the story behind the story of HAARP.

Chapter Twelve

TWISTED WORDS, STAR WARS AND POKER FLATS

'Trying to pin these guys down is like nailing jello to the wall," That was how one "No HAARP" member described the military's public relations efforts on the project. The HAARP, had little or nothing to do with nature's electropaintings in the sky, the aurora borealis. The project name was the mask behind which the military hid, letting the University of Alaska Fairbanks, through the Geophysical Institute, moved out front on the project, parading it as a research effort with an economic development spin.

The latest additions to the research have revealed government disinformation. The first new item was found in the library at the Geophysical Institutel22 and revealed the true scope planned, over the long term, for HAARP and the technologies it uses. Other important items recently uncovered were the remaining nine of twelve patents originally assigned to ARCO Power Technologies Incorporated (APTI) 123 which would eventually end up in the patent portfolio of Raytheon Corporation, one of the world's largest companies.

The meetings and information put together by the military as part of the Environmental Impact Statement (EIS) process seemed alright to most, although several people were pretty well informed about the possible ill effects of radiofrequency radiation. In most areas of the country this level of knowledge would have been unusual but in "bush" Alaska, radios are a way of life, and many plug into the planet via satellite dish and Internet connections to stay up on the latest research in many fields. In the winter, time passes slowly, and the new technologies have brought relief and stimulation to the minds of many in these remote reaches of North America. Alaskans also tend to have independent spirits, having had to carve out their niche in some of the most severe environmental conditions in the world. Alaskans are a bit skeptical. For many, the EIS meetings raised more questions than they answered.

The government seemed to try to create the illusion that the project was standing alone when, in fact, it was tied to a number of other experiments and systems. The project requires other equipment to run with the HAARP facility, some of which was described in the military's and University of Alaska Fairbanks' various documents.

The Poker Flat Rocket Range is the largest land based (5,132 acresl24) research facility in the world and the only high latitude rocket range in the United States. It is the only University operated range in the country. Poker Flat Rocket Range has been funded in past years with NASA grants of $1.5 million annually. The

122 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher, October 22, 1991.

123 United States Patent Numbers 4686605; 4712155; 4817495; 4873928; 4954709; 4999637; 5038664; 5041834; 5068669; 5202689; 5218374; and 5293176.

124 Geophysical Quarterly, Volume 10, No. 1 & 2, Winter 1992, pg, 1.

site also received a $30 million upgrade as a part of a national defense bill passed by the Congress in the early 1990'sl25 when Dr. Syun-Ichi Akasofu declared, "We plan to build the best upper atmospheric research facility in the world."126

Public relations communications on HAARP, during 1993 and 1994 denied that the project was formally tied to the Poker Flat Rocket range. During 1992 the Air Force funded, under a separate program, the launch of a 17,000 pound rocket carrying a payload of 2,770 pounds. The Spirit 11 rocket was used to send a high-tech telescope about 205 miles above the Earth to measure emissions from auroral displays. The Geophysical Institute disclosed that "Researchers at Hanscom Air Force Base in Massachusetts plan to use the measurements as a part of a larger Strategic Defense Initiative Organization (commonly known as Star Wars) study on atmospheric disturbances. Studying infrared light is important because it can prevent some Air Force satellites from being able to detect targets, other satellites, or clutter in space, just as city lights can prevent people from seeing stars in the sky." 127 A number of otheT military projects have been reported in the Geophysical Institute's publications which, although they were funded separately, produced information crucial to the planned uses of HAARP. Many of these kinds of projects are revealed throughout this book.

At the same time that the HAARP project started, and the Poker Flat upgrades were funded the University also received, again under separate Congressional funding, $25 million foT a Cray Supercomputer which the military indicated was also not "formally" tied to HAARP. 128 However, upon investigating, it was determined that this computer would be committed to 30% Defense Department uses. While the military couched their wording in ways that deflected interest away from these facts, the records were clear. What was not so clear was why they were not just saying yes, they were going to use all of these systems, yes, these systems interface with this hardware while being funded under separate programsl29 as indicated in their own planning documents. It just didn't add up; what was the big deal anyway?

In a letter to one of Alaska's legislators, the public relations man for HAARP, John Heckscher, stated that "the HAARP program is not formally tied to the Poker Flat Rocker Range, nor to the new super-computer at the University of Alaska... However, the research capabilities associated with those excellent facilities will undoubtedly be of interest and use to scientists using the HAARP facility."130 John Heckscher was at the military planning sessions which clearly described the use of these other facilities, The summary of those meetings, in 1990 and 1991, contained the following: "the incoherent scatter radar facility, envisioned to complement the planned new HF heater, is currently being funded in a separate DoD

125 Geophysical Quarterly, Volume B, No, 1 & 2, Winter 1990, pg. 2.
126 Ibid.
127 Geophysical Quarterly, Volume 10, No, 1 & 2, Winter 1992, pg. 1.
128 "Porkpie in the Sky", Anchorage Daily News, We Alaskans , December 15,1991, pages 9-14.
129 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher, October 22,1991,
130 Department of the Air force, Phillips Laboratory, John Heckscher, HAARP Program Manager, Letter to Alaska State Representative Jeannette James, November 12, 1993.

program, as part of an upgrade at the Poker Flat rocket range, in Alaska." At the same time it turned out that 30% of the computer time on the Supercomputer was for Department of Defense (DoD) purposes.

So why the misinformation? What could be gained by deception, and how much other material was being hidden behind the programs of the University of Alaska? The reports go on to describe the additional need for "rocket-borne instrumentation", discussion of which was also evaded in the responses by Heckscher to Alaskans inquiring about this project. A review of just one year's grants to the University of Alaska shows dozens of projects not "directly or formally" tied to HAARP, but forming complements of research which will undoubtedly further the program objectives 131. It was found that the military's public relations program was intended to minimize the significant factors regarding the technology, the interactivity of other projects and the real control and direction of the project. The records showed that HAARP was part of a global cooperative effort which included the USSR, Canada, Japan, Greenland, Norway, Finland, New Zealand and others[132]. NO HAARPer's questioned how much of what information was being shared with the countries uninvolved in the project, considering that all could be adversely affected by HAARP.

The University of Alaska Fairbanks is beginning to build a reputation as a leader in geophysical research and planetary system modeling. The Geophysical Institute will continue to attract researchers, but their biggest source of money is from federal governmental agencies tied to the military. The HAARP project is wholly controlled by the military, with the same warning signs around the facility as at other military installations throughout the country. The HAARP facility is a military facility. It seems the University is increasingly being "sidelined" on the project.

At this time, HAARP is "A congressionally initiated effort, HAARP is being managed cooperatively by the Air Force and Navy."133 HAARP is not a university research project; it is a "proof-of-concept" project for the military. A "proof-of-concept" project is one where advanced research experiments are designed to test, on generally a smaller scale, specific applications of research. These tests allow experimenters to extrapolate results which can then be used to engineer full size technology implementing systems. In other words, this is the step just before full weapon systems development.

The military carefully hid the interaction of the patents originally assigned to APTI and used in conceptualizing HAARP. These twelve patents are described in another chapter of this book, and show how the HAARP system will actually be used as a weapon. The risks associated with the system are also discussed. The most revealing document was one the government has kept in a very tight box - PL/GP Technical Memorandum No. 195. This document which explains the military

131 University of Alaska Fairbanks, Geophysical institute Summary of 1993/94 grants.
132 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher; October 22,1991.
133 HAARP Fact Sheet, Office of Naval Research, Phillips Laboratory, November 4, 1993.

applications of the project was supposed to be sanitized before public release. This writer was fortunate in finding this document which was misplaced in a library; as shown in another chapter. This document most effectively dismantles the public relations disinformation put forward by the military.

Chapter Thirteen

STAR WARS - 'COMPANY' CONTROL

Companies involved in the HAARP project are both interesting and mysterious. The evolution of the HAARP contract is a story within this story.

Atlantic Richfield Company (ARCO) created a subsidiary called ARCO Power Technologies Incorporated (APTI) which was based in Washington, D.C. The company had reported annual sates of $5 million and had 25 employees as late as 1992.134 ARCO, the parent company, is the second largest private employer in Alaska, primarily involved in the North Slope oil fields where it controls trillions of cubic feet of natural gas and billions of barrels of oil. The natural gas on the North Slope has been reinjected into the earth rather than "flared" off or produced for use as it is in most other parts of the world. The gas has been reinjected in order to maintain oil field pressure for enhanced production while pumping up to two million barrels of crude oil a day out of the ground. No market for this natural gas currently exists, although a $20 billion pipeline remains on the drawing boards. Finding a market for the gas is in the interests of ARCO. The site where the HAARP project has been built is close to an already granted right-of-way for a future TransAlaska Gas Pipeline. All of the significant regulatory hurdles have been passed for constructing the gas line should markets be found.

HAARP at its present stage does not represent a high energy consumer in terms of input power. The first two phases of the project might not consume more than one to ten megawatts of power. In the future, however if the project continues to grow the way that project planners want it to or expands to involve other facilities, power demands would sharply increase. ARCO originally hoped to find a large consumer for their presently unmarketable natural gas. It was this market search which brought Dr. Eastlund together with ARCO in the mid 1980's, and his inventive genius gave birth to APTI.

Eventually ARCO was able to cluster twelve patents that would provide the basis for new markets for their North Slope natural gas. The possibility of not even having to transport the gas far from the source was an even more promising possibility - a possibility which would put ARCO in the Star Wars business.

How does a small subsidiary company like APTI get a military contract for such a project? The contract with APTI was more than five times the organization's projected annual sales [135]. We believe that the only way a virtually unknown company, in the military contracting environment, could get a contract like this is if they possessed proprietary information of use in the project (i.e., the twelve APTI patents). This fact was recently confirmed by Dr. Eastlund who was interviewed by Jeane Manning. He said APTI was formed a year after he made his discovery while under contract to ARCO to find a use for their gas. The company was formed to develop his patent by encouraging the military to test and eventually build

134 America's Corporate Families. 1993, Volume I, page 156.

135 Ibid.

the system. The military has continued to deny the connection between Eastlund, APTI and HAARP throughout the project. However, the three Eastlund patents were all assigned to APTI. 136 The other nine patents, according to the Patent Office records,
were also assigned to APTI by their inventors. This begins to unravel the disinformation spin of the HAARP planners. APTI won the contract to build HAARP, while bidding against an experienced government contractor with a strong success record - Raytheon. Raytheon was number 52 on the Fortune 500 list for 1993 and is one of the biggest defense contractors in the world. In the bid rating process with the military the only thing that APTI had going for it was a set of twelve compelling patents.

APTI's twelve patents are discussed in another chapter. These patents were used in the HAARP project and some of their inventors were listed as "key personnel" in the HAARP contract with APTI. Also, according to the contract if APTI switched any of the key personnel they could lose the entire project.

After the contract was awarded, APTI was sold to E-Systems of Dallas, Texas. The June 10, 1994 sale was transacted under undisclosed terms, APTI had shown no net income since it opened in the late 1980's, which made the sale particularly interesting. 137 It was reported that APTI was involved in research financed by government grants. E-Systems changed the name of the company to Advanced Power Technologies Incorporated, and assumed control of the patents and the HAARP project. 138 E-Systems reported annual sales of $1,9 billion a year, had 18,662 employees 139 (1992) and is one of the largest intelligence contractors in the United States. So why would E-Systems buy a company with no net income and no major assets except for the twelve patents and an unfunded second phase of a construction contract? The only real value was the contract, and the technology in the package of patents.

E-Systems was the subject of a lengthy article in the Washington Post by staff writer John Mintz. He disclosed that E-Systems' technologies were "part of the central nervous system for the nation's intelligence community." $1.8 billion of their $2.1 billion in sales was for classified projects. A large part of the projects came from the National Security Agency (NSA) and Central Intelligence Agency (CIA) and other intelligence organizations. Many of the company employees are former personnel from the NSA, CIA and military retirees. People with highly technical backgrounds and a history of working in government intelligence circles are hired by the company almost automatically, according to the Washington Post article. Retired Navy Admiral William Raborn, CIA director under Lyndon B. Johnson, for years served on the board of directors, 140

E-Systems was one of the featured stories in a CBS, 60 Minutes segment was aired February 26, 1995, The report echoed the assertions which were made in the

136 United States Patent Numbers 4686605; 4712155; 5038664.
137 "E-Systems Buys ARCO Power Technologies", The New York Times, June 30, 1994.
138 Ibid.
139 America's Corporate Families. 1993, Volume I, page 552.
140 The Secret's Out; Covert E-Systems Inc. Covets Commercial Sales", by John Mintz, Washington Post, October 24,1994, pg, A1, A10.

Washington Post article. The company was described as an organization operating in the "black world" - an area so secret that employees are not permitted by law to discuss anything about their work except with those individuals who have an official "need to know" classification. Of the company's annual sales, 85 percent was for classified work, with an estimated $800 million involved in projects so sensitive that the government denies that the projects even exist. The story went on to paint a picture of an organization which thrives on contracts issued by the CIA, NSA and military intelligence organizations.141

In the CBS, 60 Minutes segment, the secret relationship with the United States government was illustrated by describing one of E-Systems more public law suits. In the course of the law suit, a court order was issued which forbad the disclosure of E-Systems' classified relationship to the United States government. The most unusual part of the order was that none of the parties to the suit could even disclose that the order existed or that the government had even sought such an order. Even more revealing about this shadowy organization was that no one was allowed to have a copy of the document. They could only view it for a few moments in the United States Attorney's office. They were not allowed to take notes or in any way record their comments about the order, and they were forbidden from even talking about the existence of the document, under threat of incarceration. The order was so secret that even the judge could not have a copy of it, and could only view it upon special request. The secrecy of the document was appealed all the way to the United States Supreme Court where a ruling was issued which allowed the parties to talk about the order. Even now, nobody can get a copy of the document itself. 142

According to the E-Systems 1994 annual report to stockholders, their business mission is clear. "Our core business activities continue to be focused on intelligence, reconnaissance and surveillance." In the report they describe a number of their most promising prospects for increases in profits. They also describe the purchase of APTI from ARCO, although they do not indicate the amount paid. 143

The technologies that E-Systems developed are awesome. They include systems for law enforcement which can intercept faxed messages, telephone calls, modem transfers, and video transmissions on a single system in eavesdropping by the government. Their Global Positioning System (GPS) technologies (satellite based) can locate objects anywhere in the world within one foot of the object's actual location. The refitting of aircraft for border monitoring and defense purposes are also disclosed in the report. The company's operations are mostly hidden, and the annual reports seem to be one of the few sources for information on the organization. 144

As this book was in its final days of writing, another twist to the corporate tangle occurred. Raytheon Corporation bought out E-Systems for $2.3 billion. 145

141 "E-Systems", 60 Minutes, CBS News, N.Y, N.Y.,, February 26,1995.
142 Ibid.
143 "E-Systems, Inc. Nineteen ninety-four Annual Report to Stockholders"; March 10,1995.
144 Ibid.
145 "Raytheon to Acquire E-Systems for $64 a Share, or $2.3 Billion; Offer is 41% Premium Over Friday's Close; Rival Bid is Unlikely" by Steven Lipin and Jeff Cote, The Wall Street Journal, April 3, 1995, pges A1, A3 and A16.

The entire E-Systems' board of directors were kept as advisors for five years with full pay. The article went on to describe the company's main activities as super secret projects operated out of the Pentagon. Raytheon's profits mostly came from their government contracts, according to the same article.

So who is Raytheon, and why would they acquire E-Systems? They are a $10 billion a year organization, ranked number 52 among the Fortune 500 with more than 60,000 employees. They were also one of the original bidders on the HAARP project, and now they have the patents and the Phase-Two contract on the project. Buying E-Systems will give Raytheon a significant increase in annual sales and cut competition in an environment of shrinking defense budgets. The combination of these two organizations' resources will create one of the most powerful intelligence contractors in the world. The systems that these companies can now develop, as a single organization, will make those old Jules Verne stories look like Mother Goose. Those little grains of information on E-Systems appearing in their annual reports will cease to exist, as their existence is buried in the depths of their new owner's corporate identity.

APT1, when it was owned by ARCO, was relatively easy to keep track of because it was small. The patent records and the data surrounding ownership could be traced. Its purchase by E-Systems raised eyebrows and began to mask the assets behind a clouded corporate structure. With the takeover, it seemed that the HAARP project would go into the black world of hidden programs. HAARP was now at the bottom of the sea of the corporate structure of one of the largest private companies in the world.

Besides their newly acquired HAARP contract, E-Systems had developed a number of other technologies. They have developed clustered computer networks called EMASS systems which can store five trillion pages of text - a file pile that would reach a hundred and fifty miles high - from the surface of the Earth right into the ionosphere. Their computer can sort data at lightning speed, and has applications in the oil industry for storing and sorting seismic information. 146 They also control once secret remote sensing equipment capable of mapping the Earth's underground formations. 147 These technologies, coupled with what APT1 brought together in their patents, formed an incredible technology package for one of the most profound weapon systems yet conceived. Could the marriage of technologies in these companies create the possibility of those types of uses contemplated in intelligence circles as necessary for the ultimate control of mankind through bloodless warfare and manipulation of mental functioning? E-Systems had amassed huge capabilities for the most secret organizations in the country, and had gained control of the HAARP technologies.

Now that it controls E-Systems and APT1 assets, Raytheon can develop even the most bizarre ideas of the military and intelligence communities. The integration of the patents, resources and capabilities into this huge organization can now produce even the most machiavellian dreams of "national security" thinkers...

146 "The Secret's Out: Covert E-Systems inc. Covets Commercial Sales", by John Mintz, Washington Post, October 24,1994, pg. A1, A10.
147 Ibid.

Chapter Fourteen

"THE PROJECT'S NOT CLASSIFIED."

The military representatives maintain that HAARP is not classified and that they are making all information available to the public. In April 1995, a document, PL/GP Technical Memorandum No. 195, came into the hands of this researcher, even though it was not supposed to be released to the public. 148 The document was developed from presentation notes and papers delivered at Hanscom Air Force Base between April 30, and May 1, 1991, and was 613 pages long. The meeting developed HAARP specifications, and provided insights into the hopes of project planners.

The military limited distribution of PL/GP Technical Memorandum No. 195. On page ii of the document, the "Preface" appears with notations:

"The PL/GP Technical Memorandum Series is intended to make results of PL (Phillips Laboratory) in-house scientific efforts rapidly available to specific groups and individuals known to have an immediate interest in the results obtained...A Technical Memorandum may not be referenced in the open literature; however, results presented therein may be referenced as 'private communication' with the written consent of the originating office."

This revealing paragraph explained how the government could say, in slick word games, that there was no record or that there was no published document available when one was requested. They considered the document a "private communication" of the sort that would not be readily available under a freedom of information request, In the "Foreword" (page iii), the intent to hide this important document became more clear,

"The report is intended for the use of the workshop attendees, PL (Phillips Laboratory), and ONR (Office of Naval Research)...The contents of the report is not available to the general public. Consequently, the appearance of any material herein does not constitute publication."

How do you print a pile of documents 613 pages thick, and say it "does not constitute publication"? "Non-published" material does not exist, so it will not be produced unlike a classified document which the government at least has to acknowledge is not available for release. This document's very existence could be denied and it would never be produced through normal channels. It becomes obvious, upon reading the document, why they did not want it out to the public. This particular document sort of kicked a few holes in the song and dance given by the government in the public meetings by program planners. We know there are additional Technical Memoranda on the project. Perhaps these other documents will come to light.

148 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher; October 22,1991.

But what did the Technical Memorandum describe? First, a system of ionospheric heaters, as these radio transmitters are described by the government, was suspected by Begich and Manning to be networked in a web of cooperation which would allow for these devices to be used together. If these ionospheric heaters could be used in resonance (harmony) with each other, a significantly larger effect could be realized through their collective energies being focused at a point far above the Earth. This particular memorandum revealed that this was exactly what the military had intended. It was also obvious that the military had been working with the systems in the USSR as well as the West in recent years. We discovered mat the maps issued by the HAARP program managers neglected to list a number of transmitter sites around the world, including systems in Greenland, the South Pacific, Japan, and Europe (Eiscat) among others. The Technical Memorandum showed that this program would run a number of experiments together with these other transmitters and diagnostic tools.

The documents specified the need for powerful computers[149] and the need for rocket launching facilities 150. Upgrades to the Poker Flat Rocket Range were discussed at some length, and these upgrades were mostly made under separate funding. The military continued, even after this conference, to insist that the super-computing and launching facilities built near Fairbanks were really separate from HAARP but might be somehow, as kind of an afterthought, useful. These facilities were not just handy extras; they were required to make the project a complete program and were specified from the beginning. This is clear in the Technical Memorandum, but the military denied it.

A crucial point was diagramed in the documents[151] - three radio frequency transmitters were spaced several hundred kilometers apart with their energy focused on the same point in the ionosphere. This would allow a significant increase in power density, well over what was possible with just a single transmitter. The global shield concept envisioned by Eastlund began to make a lot more sense in light of these systems being used together. If these transmitters could be tuned in resonance (harmony) with each other, a very large effect could be obtained. If those positioned around the northern latitudes were turned on and tuned just so, they would energize a very large portion of the ionosphere, creating many of the effects described in the patents and sought by the military.

The use of the system for generating ELF signals was also well illustrated[152]. It was obvious that these ELF signals would be sent through the atmosphere and the lithosphere (upper portion of the earth itself) in order to communicate with sub-marines. These signals would pass through every living thing in the radiated areas which covered most of Alaska, Western Canada and possibly the

149 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher, October 22,1991, page 55.

150 Ibid., pages 145-152.

151 Ibid., page 144.

152 Ibid., pages 256-261,

rest of the world, once a full shield of connected facilities is developed. These types of radiations and their effects on living organisms, including humans, are discussed in another section of this book. It is these specific ELF radiations which potentially have the most devastating effects on people and animals.

Another interesting section of the report[153] discusses the use of satellites controlled by the "Blackbeard Team" of the Los Alamos National Laboratory. "Blackbeard is a satellite RF experiment designed to study distortion and discrimination of transionospheric VLF signals originating from the earth." Blackbeard is part of the Alexis satellite. This was another very expensive project which was funded separately from HAARP. It should also be remembered that Los Alamos is the heart of some of the most secret defense systems in the world, including "nonlethal" RF radiation weapons which are explored in another chapter of this book.

The work of the Blackbeard Team was described, in part, in an article published in 1994.154 The article described "gamma ray flashes" emanating from some thunderstorms. These flashes were unusual in that they went up toward the ionosphere as opposed to down to the earth like most bolts of lightning. "A satellite launched last year to test ways to monitor nuclear blasts detected microsecond radio flashes, apparently linked to thunderstorms, that are 10,000 times more intense than the radio crackling such storms normally generate", was how one of the new discoveries was described in the article. These flashes can not be explained in terms of known science. They are extremely short in duration, which is why they were not detected years ago. The gamma rays themselves are found at over 30 - to 100 kilometers above the cloud tops. This new knowledge was later confirmed by further investigations conducted by the Geophysical Institute of the University of Alaska Fairbanks.

This latest discovery was unexpected, and demonstrates the general lack of knowledge about our upper atmosphere. It is more reason to worry about additional tampering planned by HAARP managers.

The entire unpublished report, PL/GP Technical Memorandum No. 195, lays open the project linkages for the directions of the HAARP program. Government research going back many years contributed to the perceived need for a more versatile controllable heater. Dr. Bernard Eastlund had the missing link through his patents which describe a system capable of packing unheard of power densities into the ionosphere, levels which could pierce the natural shield which protects us all from being bombarded by death delivering cosmic radiations. The possibilities presented in the other APTI controlled patents took Eastlund's basic concept forward toward applications predicted as early as the 1950's. It is doubtful that Eastlund understood the reach his device would have, or the state of the technologies which he helped to enhance with his invention. To the military, Dr. Eastlund was just an outsider unknown to military planners, and a person who was too open about his science. They took what they needed, through their research surrogates at APTI and within the University research centers, and moved forward without them.

153 Ibid, pages 352-355,
154 "Atmospheric Scientists Puzzle Over High-Altitude Flashes", Science, Vol 264, May 27, 1994, pages 1250-1251.

Chapter Fifteen

THE TWELVE PATENTS OF APTI TECHNICALLY TESLA

APTI held twelve patents, all of which were linked to Star Wars defense systems. APTI was the main contractor on the first phase of the HAARP project. These patents represented technologies which were inconsistent with the normal activities of ARCO, the parent organization of APTI. In ARCO's 1994 annual report, no mention of APTI OT the HAARP contract was found. Apparently ARCO was not in the kind of technology and military construction contracting business suggested by this technology. APTI was an anomalous subsidiary of ARCO, with ARCO having no real expertise, outside of APTI, for developing these kinds of patents.

This writer believes that ARCO did not want to be involved in the defense industry development of these patents. After all, they were just looking for a market for natural gas. Gas on the North Slope of Alaska was the issue for ARCO. The cost of a pipeline and related facilities needed to move the gas to southern Alaska was estimated at more than $20 billion, pricing the gas out of the market. So APTI acquired the twelve patents and a potentially lucrative market.

The patents originally held by APTI are described below.

United States Patent Number 4,686,605
Issued: August 11, 1987
Invented by: Bernard J. Eastlund
Titled; "Method and Apparatus for Altering a Region in the Earth's Atmosphere, Ionosphere, and/or Magnetosphere".

This patent was filed on January 10, 1985. On April 11, 1986, the Office of Naval Research Code 308 in Arlington, Virginia sealed the patent application under a "Secrecy Order" which forbade further work or any disclosure of information on the patent. This, no doubt, concerned Dr. Eastlund and APTI. 155 The order was a standard form letter stating provisions of the National Security Act that allowed the Defense Department to seal the information. The penalties for disobeying it were spelled out in the document, and included fines and long prison terms.

Patent examiner Salvatore Cangialosi of the U.S. Patent Office rejected the application on November 28, 1986. According to the Summary of Action, "Claims 1-38 are rejected under 35 U.S.C. 101 because the invention as disclosed is inoperative and therefore lacks utility."

On December 9, 1986 Dr. Eastlund and his attorney met with the patent examiner to discuss the rationale behind the decision to reject it. On January 14, 1987, an amendment was filed which reduced the number of claims and provided

155 United States Patent Office Master File 06/690,333 (SC/Serial Number) on Patent No. 4,686,605.

documentation to prove that the invention would work. The file notes say it was reviewed again in early February 1987. In late March, the Secrecy Order was lifted.

The Eastlund patent was different than technologies of ionospheric heaters already operating around the world. The first significant difference was the way the RF radiation was concentrated. The energy was focused to a point in the ionosphere, with a wide base of the energy at the transmitter site. The other antenna designs operating around the world radiated RF in the opposite way, so that it was like a cone with the point at the transmitter and the wide end in the ionosphere. In other words, the Eastlund invention concentrated the power in the ionosphere, while the others spread
it out over an increasingly larger area as the energy moved further away from the transmitter. This difference allowed a significant concentration of energy into the ionosphere. The Eastlund device would allow a concentration of one watt per cubic centimeter, compared to others only able to deliver about one millionth of one watt.

This was a huge difference, which was "sufficient to cause movement of a plasma region along said diverging magnetic field lines to an altitude higher than the altitude at which said excitation was initiated." 156 What this means is that it would lift the ionosphere and alter its character in the ways necessary to create the effects described in the patent.

Eastlund further explained the effect of cyclotron resonance in building the power density over a large area of the ionosphere. The military would use this knowledge later in describing the "painting" of the ionosphere, which is why they wanted a system that would scan a fairly large area. They could, with this new technology, focus the energy and cover a large area for their effects.

Three publications cited in the patent formed the basis for the research into the technology. It was these references which sparked the original investigation which led to this book. The articles related to the work of Nikola Tesla in the early 1900's. The articles from the New York Times, December 8, 1915 and September 22, 1940, were quoted earlier in this book.

What would this technology be worth to ARCO? The profits they could generate by transmitting power from the point of production to the point of consumption without wires were enormous. Through normal powerline transmission this was not possible because of power losses over long distances. What wireless transfers of electrical energy could provide, with the right complement of equipment, could be astounding. Natural gas could be converted to transferable energy and literally beamed to wherever it needed to go. Between May, 1994, and April, 1995, no clear indications of this application for HAARP were found until the other patents listed in this section and the "key personnel" list for APTI was found and connected. In the articles referenced by Eastlund in his patent, was another patent of Tesla's (United States Patent 1,119,732). This patent led to several others which were related (787,412 and 685,956, among others). Some of these new APTI patents were exactly what was suspected - a wireless power transmission system.

156 Amendment January 1987 to the original Patent Application of Bernard Eastlund for the subseauentlv issued Patent Number 4,686,605.

Patent number 4,686,605, issued August 11, 1987 to Bernard J, Eastlund and assigned to APTI, is one of three related patents by the same inventor cited in this chapter. These patents revisit and go beyond the technical applications envisioned by Tesla. We quote from Eastlund's patent:

"In the past several years, substantial effort has been made to understand and explain the phenomena involved in belts of trapped electrons and ions, and to explore the possible ways to control and use these phenomena for beneficial purposes. For example, in the late 1950's and early 1960's both the United States and the U.S.S.R. detonated a series of nuclear devices of various yields to generate large numbers of charged particles at various altitudes, e.g. 200 kilometers or greater."

"This can cause confusion of or interference with or even complete disruption of guidance systems employed by even the most sophisticated of airplanes and missiles. The ability to employ and transmit over very wide areas of the Earth a plurality of electromagnetic waves of varying frequencies and to change same at will in a random manner, provides a unique ability to interfere with all modes of communication, land, sea, and/or air, at the same time. Because of the unique juxtaposition of a usable fuel source at the point where desirable field lines intersect the Earth's surface, such wide ranging and complete communication interference can be achieved in a reasonably short period of time...Thus, this invention provides the ability to put unprecedented amounts of power in the Earth's atmosphere at strategic locations and to maintain the power injection level, particularly if random pulsing is employed, in a manner far more precise and better controlled than heretofore accomplished by the prior art, particularly by detonation of nuclear devices of various yields at various altitudes...Further, by knowing the frequencies of various electromagnetic beams employed in the practice of this invention it is possible not only to interfere with third party communications but to take advantage of one or more such beams to carry out a communications network even though the rest of the world's communications are disrupted. Put another way, what is used to disrupt another's communications can be employed by one knowledgeable of this invention as a communication network at the same time. In addition, once one's own communication network is established, the far reaching extent of the effects of this invention could be employed to pick up communication signals of others for intelligence purposes."

"This invention has a phenomenal variety of possible ramifications and potential future developments. As alluded to earlier, missile or aircraft destruction, deflection, or confusion could result, particularly when relativistic particles are employed. Also, large regions of the atmosphere could be lifted to an unexpectedly high altitude so that missiles encounter unexpected and unplanned drag forces with resultant destruction or deflection of same. Weather modification is possible by, for example, altering upper atmosphere wind patterns by constructing one or more plumes of atmospheric particles which will act as a lens or focusing device. Also as alluded to earlier, molecular modifications of the atmosphere can take place so that positive environmental effects can be achieved. Besides actually changing the molecular composition of an atmospheric region, a particular molecule or molecules can be chosen for increased presence. For example, ozone, nitrogen, etc., concentrations in

the atmosphere could be artificially increased. Similarly, environmental enhancement could be achieved by causing the breakup of various chemical entities such as carbon dioxide, carbon monoxide, nitrous oxides, and the like."

While the HAARP device being constructed in Alaska at present may not be large enough to create all of these effects, it could test the ideas Dr. Eastlund expressed. The military denies that they are using any of the Eastlund ideas; however, careful review of the materials leads to the conclusion that the military is misleading the public. Moreover, Dr. Eastlund in a National Public Radio broadcast in 1988 reported that the military had tested some of the ideas presented in the patents.

United States Patent Number 5,038,664
Issued: August 13, 1991
Invented by: Bernard I. Eastlund
Titled: "Method for Producing a Shell of Relativistic Particles at an Altitude above the Earth's Surface".

In outlining the background of this invention in the patent, Dr. Eastlund describes the development of particle beam weapons for destroying incoming hostile missiles. The problem with particle beams is that they require perfect targeting so that the object could be hit and destroyed. The new invention eliminated the need for such precision, in that it created a literal "shell" of particles which would drift around the planet, destroying electrical components of objects passing through the "shell". According to the patent, "The shell so formed may be used as an antimissile shield. The high-energy, relativistic particles in the shell will collide with any missile passing therethrough to give up energy which, in turn, will damage or destroy the missile."

The power level described in the patent is extremely high, and the effects on the environment, and most particularly on the weather are unknown. What is known is that this type of power manipulation would significantly destabilize natural ionospheric systems.

Another important aspect of this invention is that it also requires large supplies of energy, and would have to be ctose to where the magnetic lines of force around the planet intersect the earth, The North Slope of Alaska is described as providing the ideal location.

United States Patent Number 4,712,155
Issued: December 8, 1987
Invented by: Bernard J. Eastlund and Simon Ramo.
Titled: "Method and Apparatus for Creating an Artificial Electron Cyclotron Heating Region of Plasma".

The same previously cited New York Times articles about Teste's work were referred to in this patent, with the same emphasis on the North Slope of Alaska being the ideal place. Alaska has the right amount of natural gas and is situated in the right place relative to the natural magnetic lines of force. This invention could be used in communication systems, and perhaps for energy transfers through the ionosphere, to be tapped off at distant points.

The three Eastlund patents represent the advances on which HAARP planners have hung their hats in putting forward the project.

* * *

United States Patent Number 5,068,669
Issued: November 26, 1991
Invented by: PeteT Koert and James T. Cha.
Titled; "Power Beaming System".

Peter Koert was listed as one of the key people on the HAARP project, in the government contract with APTI.157 Power beaming was a technology that Nikola Tesla had developed through his patent series referenced in Eastlund's work. The idea that Peter Koert would become a key person to the HAARP program made a good deal of sense, considering his expertise in power beaming technologies.

This "Star Wars" technology developed by ARCO Power Technologies, Incorporated was used in a microwave-powered aircraft. The aircraft was reported to be able to stay aloft for up to 10,000 hours at 80,000 foot altitudes in a single mission. This craft was envisioned as a surveillance platform. The craft had no need for refueling because the energy was beamed to it and then converted to electrical energy for use by the aircraft. Flight tests were undertaken at Tyendinga Airport near Kingston, Ontario, Canada in the early 1990's.l58 This test by APT1 most likely involved this patent and patent number 5,218,374 which is described in this chapter.

According to the patent, "The present invention relates in general to the transfer of energy by means of electromagnetic waves to power a remote device. More specifically, the present invention relates to a system for 'power beaming' energy from a source at high frequencies and rectifying such energy to provide a source of DC energy to a remote device." The patent went on to describe the attempts over the years to create a device which could be used and was practical. The background section states, "...the concept of powering a satellite or free flying aircraft by power beaming has received a great deaf of attention. The advantages of such a system are readily apparent, for example, an aircraft could be maintained on station indefinitely to act as a low cost communications or reconnaissance platform."

The idea is to convert microwaves to DC power, which can be done very efficiently and cost effectively with the right kind of transmission system capable of

157 Office of Naval Research, Contract Number N00014-92-C-0210, ARCO Power Technologies Incorporated as Contractors, September 16,1992 with Amendments through October 19,1993.
158 Aviation Week, Volume 135, No, 22.

focusing the power into a narrow beam. The HAARP system provides a very effective means of transferring such power at maximum efficiency. Within the patent, the use of the term "gyrotron" appears. It refers to cyclotron resonance, a concept and primary part of the Eastlund patents and an attribute of the HAARP transmitter, according to the government records.

This technology has already been tested by APTI.

United States Patent Number 5,218,374
Issued: June 8, 1993
Invented by. Peter Koert and James T. Cha.
Titled: "Power Beaming System with Printed Circuit Radiating Elements having Resonating Cavities".

Again, Peter Koert was listed as one of the key people assigned to the HAARP project by APTI, according to the government contract. 159 Also important to note in this patent and the previous one, is the mention of NASA report No. CR179558, March 11, 1987 by William C. Brown of Raytheon Company. Raytheon did the basic work leading to this patent. William C. Brown is now at the University of Alaska Fairbanks where he is continuing the development of these technologies, His current project at UAF is called SABER which is an acronym for "Semi-Autonomous Beam Rider". The concept is to beam radio-frequency energy to a helicopter in order to suspend it in the air without an on-board fuel supply. The project "is intended to promote public interest and understanding concerning microwave power transmission." 160

The system to be used by Brown in the wireless transmission of energy to power the craft will be from a 2,45 GHz beam. This will complete a series of tests which he started in 1965. The transmission, and conversion, of this energy is now possible via the APTI patents and HAARP.

Raytheon, Brown's old employer and the new owner of the APTI patents, was one of three bidders on the HAARP project. Eventually, through a series of corporate buyouts, Raytheon would come to own all of the patents described in this chapter as well as the contract for the second phase of HAARP construction.

In the patent it was made clear that this was "a continuation-in-part" of the previous patent by Koert and Cha. This patent describes a system for converting radiofrequency (RF) radiation into DC power using a "cross dipole antenna" which is to be used to receive the RF energy before conversion to DC. This patent carries the power-beaming ideas further, to the point where they can be used. Previously such systems were impractical because of technical limitations.

159 Office of Naval Research, Contract Number N00014-92-C-0210, ARCO Power Technologies Incorporated as Contractors, September 16,1992 with Amendments through October 19,1993.
160 Internet copy obtained from http://asgp.uafsoe.alaska.edu/saber.html.

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United States Patent Number 5,293,176
Issued: March 8, 1994
Invented by: Paul G. Elliot.
Titled: "Folded Cross Grid Dipole Antenna Element".

Although it is unknown whether this particular patent was used in the HAARP program, what is known is that the inventor, Paul Elliot, was part of the team identified in the government documents. He obviously brought to the project a high level of knowledge of antenna arrays and related technology. It is not known whether this antenna was intended to be used for sending energy, receiving power or both. This technology is useful in power-beaming systems as well as the other applications described in other patents in this chapter.

We speculate that this antenna provided a more efficient system of energy transfer for use in the Eastlund applications. It is possible that, with the antenna gain realized by this design, a larger amount of power could be sent up to the ionosphere. This might be possible from a much smaller antenna field than originally contemplated by Eastlund.

* * *

United States Patent Number 5,202,689
Issued: April 13, 1993
Invented by: Robert W. Bussard and Thomas H. Wallace.
Titled: "Lightweight Focusing Reflector For Space".

The reflector is intended to complement power-beaming systems previously described in this chapter. According to the patent, "Large reflectors have many important applications in space. Reflectors can be used, for example, to reflect sunlight onto a solar collector or redirect a microwave power beam." The system for the power-beaming described in this patent was designed for sending 10 gigawatts of power.

The transmitting, reflecting and receiving system is massive, and the cost of building and using such a system is immense. However, according to the patent,

"The instant invention can be used to transmit power less expensively than the use of microwaves within the Earth's atmosphere. It is expected that as the cost of deploying equipment in space decreases, the cost of using the instant invention to transmit power will become lower than the cost of transmitting power using conventional transmission lines. A cost analysis has been performed using cost projections for the 2000 to 2010 time frame. This cost analysis suggests that a principle limiting factor is efficiency and the cost of the radio frequency sources, not the cost of fabricating and launching the reflector."

The HAARP radiofrequency transmitter, using a focused beam, largely addresses the transmitter-limiting factors described in the patent.

The patent goes on to describe the idea of generating energy in locations where it is cheap, and beaming it to areas where energy costs are high. The economic viability is shown, although the size of the project is quite targe. The construction of the TransAlaska natural gas pipeline has been estimated at over $20 billion dollars, without considering the costs of special ships, off loading facilities and then power generating plants in addition to operating costs. To produce energy at the source and redirect the capital costs of alternate systems to power beaming systems would likely be economically feasible. However, there would be a significant risk to anything flying in the path of the ten-gigawatt beam or if the reflector was somehow turned, reflecting the energy into the wrong receiving location and into perhaps a populated area. This risk is not adequately dealt with in the patent.

* * *

United States Patent Number 5,041,834
Issued: August 20, 1991
Invented by: Peter Koert.
Titled: "Artificial Ionospheric Mirror Composed of a Plasma Layer Which can be Tilted".

The expertise that Peter Koert brought to the HAARP project is most evident in this application. This application was scheduled to be tested in September, 1995. This test will be done using both HAARP and HIPAS transmitters. The Artificial Ionospheric Mirror, or AIM as it is referred to in the government records, will be very useful to the military. This patent also refers to two of the Eastlund patents 161.

This invention creates an Artificial Ionospheric Mirror (AIM) by creating a plasma layer in the ionosphere which will allow a transmitting station to bounce radiofrequency energy off of the AIM for a variety of uses. This invention provides "over-the-horizon" radar and communication capabilities to the military, over great distances. It will allow the military to send communications, and locate incoming objects, with significantly improved control and efficiency. In early HAARP planning, this was one of the areas considered very important to the program and was referred to with great enthusiasm by the military.

* * *

United States Patent Number 4,999,637
Issued: March 12, 1991
Invented by: Ronald M. Bass.
Titled: "Creation of Artificial Ionization Clouds Above the Earth".

161 Eastlund Patent Numbers 4,686,605 and 4,712,155.

This invention also drew from the Eastlund patents[162] which were cited in the issued patent document. This is similar to the previous invention, but it uses two antenna systems which send energy to the same point, thus creating, by a complex set of ionospheric interactions, a "plasma cloud". The cloud can also be made with one antenna. The cloud is created with minimum energy, and allows a much improved "over-the-horizon" (OTH) radar system in terms of detection of both far out and close
in objects.

An interesting part of the OTH radar system that HAARP, in part, represents is that the HAARP transmitter is sitting on the incomplete construction site of the original OTH radar system funded by the United States Congress. The site was being demobilized because the military suggested that with the Cold War ending it was no longer needed.

It appears that the reason that the old OTH system was abandoned was because it was obsolete - based on this new technology. The OTH radar project never ended at this location; it just changed to a much more versatile multi-use tool, the HAARP transmitter. Another consideration was that to build a HAARP radiofrequency transmitting system was much quicker and cost effective.

United States Patent Number 4,954,709
Issued: September 4, 1990
Invented by: Arie Zigler, Yossef Elsen from Rishon Le Zion, Israel.
Titled: "High Resolution Directional Gamma Ray Detector".

This device was designed to work with some of the other patents. It is intended to distinguish the "signature" (the unique characteristics of the object which allow it to be identified at a distance) of incoming airborne objects to determine if they are carrying nuclear devices, among other things. The device allows an operator to see the direction of the incoming objects by screening out the directions which are of no concern. In the words of the patent,

"The present invention relates to gamma ray detection. More specifically, the present invention is related to light weight directional gamma ray detectors having a high degree of angular resolution, high efficiency, and an ability to discriminate low energy gamma rays."

The invention is-able to operate effectively in areas which have a "large number of low energy background gamma rays." Gamma ray detection of this type is required in order to operate the system in the patent described below. It is also of use in other technologies described in this chapter. Gamma ray detection tells an operator a great deal about an incoming object, and is particularly useful in identifying objects carrying nuclear warheads.

162 Eastlund Patent Numbers 4,686,605 and 4,712,155.

* * *

United States Patent Number 4,817,495
Issued: April 4, 1989
Invented by: Adam T. Drobot.
Titled: "Defense System for Discriminating Between Objects in Space".

This patent refers to Eastlund's earlier patent number 4,686,605 as well as other documents about "Particle Beam Weapons" and "Space-Based Ballistic-Missile Defense" systems more commonly refer-red to as Star Wars systems. This invention is intended to work with gamma ray detectors and was described as;

"A defense system and a method for discriminating between armed reentry vehicles and unarmed objects which are in close proximity of each other. The reentry vehicles and the unarmed objects are bathed in a cloud of relativistic electrons with the resulting signatures from heavy objects, i.e., reentry vehicles, being imaged directly. Detectors sense the location and identity of the reentry vehicles and pass this information onto a weapons platform for tracking and interception."

In reading this, we are tinked back to other patents described in this chapter, and can see how these varied uses of Eastlund's original ideas will have far-reaching effects on the way in which wars are fought.

The importance of this invention to the military is described in the patent;

"Presently, the expected scenario for any large-scale intercontinental ballistic missile attack includes the deployment of a large number of decoys and penetration aids in a 'threat cloud' around one or more armed, reentry vehicles in an attempt to confuse any defense systems set up to counteract the armed missiles...Since the total number of objects expected in a typical threat cloud may well exceed one hundred thousand, any truly effective defense system must include a system which is capable of 'interrogating' all of the objects in the threat cloud and quickly discriminating between the deadly reentry vehicles and harmless decoys and penetration aids."

Also in the patent emphasis is placed on the value of a ground-based system as opposed to other Star Wars systems which rely heavily on earth-orbiting space hardware. Space borne systems are not as easy to maintain, and more easily disabled by adversaries. This invention reduces the computing needs of defense systems significantly. Reducing the number of tracked objects to just those which are a real threat allows for targeting resources and counter measures to be focused on them specifically.

The ideal location for this system is also identified as the North Slope of Alaska, the most likely path for over the pole nuclear missiles. It is also where the

large gas reserves could be used to create the necessary radiofrequency radiation transmitting system. The same magnetohydrodynamic generators mentioned by Eastlund are mentioned, along with the same type of antenna arrays. The patent describes the concept in the same general way that Eastlund did, but defines how the defense components would interact with the system most efficiently.

Another application of this technology is described;

"While the present invention has been described for discriminating between armed and unarmed vehicles in a threat cloud during an impending attack, it can also be employed to 'interrogate' orbiting satellites to determine if any said satellites may be carrying nuclear weapons for future launch. Again, a cloud of relativisiic electrons would be created around the satellite of interest for interaction therewith to produce a signature from that satellite which, when analyzed, would reveal the nature of the materials contained in the satellite."

This invention is demonstrated, in prototype form, by the HAARP project. HAARP can be used in this way, and is intended to be used for this purpose,

* * *

United States Patent Number 4,873,928
Issued: October 17, 1989
Invented by: Frank E. Lowther.
Titled: "Nuclear-Sized Explosions without Radiation".

This device was designed for "producing explosions from an explosive gas mixture which has a shock yield comparable to a nuclear explosion, but one which produces no radioactive fallout."

The patent described the background of the invention.

"Between 1945 and 1960, the United States exploded nuclear devices which had a total yield equivalent to approximately 200 megatons (MT) of trinitrotoluene (TNT). Tests conducted by other countries during this time brought the total yield of nuclear explosions to approximately 400 MT. It was quickly recognized that such testing could not continue since each nuclear explosion produced radioactivity that seriously threatened the environment. To protect the environment from such radioactive fallout, most of the world's nuclear powers signed the Nuclear Test Ban Treaty in 1963 which prohibited nuclear explosions in the atmosphere, underwater, and in space..."

"The necessary prohibition against above-ground testing of nuclear explosives, however, has created situations where alternates to such explosions are needed. For example, all of the sophisticated communication systems, defense systems, weapons systems, etc. that have been designed and built for the military since 1963 have never been tested in their ultimate operating environments, i.e. under nuclear

blast conditions...Radiation dosages and electromagnetic pulses which simulate those from nuclear explosions have been produced in shielded laboratories but the extreme shock energies which can be expected from nuclear explosions, e.g. 1 kiloton (KT) or larger, have not been satisfactorily duplicated..."

So, APTI filled another technological void for military planners by developing a way to test the effects of a nuclear sized shock wave's impact on the electronics of defense systems. The invention side steps the treaties on nuclear testing in the atmosphere which allow the military the opportunity to test their hardware without violating these international agreements. As far as is known, this particular invention is not part of the HAARP program but is the last of the APTI patents.

The ideal location of this invention, like the others, was identified in the patent as the North Slope of Alaska.

"Preferably, the combustible gas is one that is naturally available in large quantities and is one that can easily and safely be transported to the test site. For example, large quantities of natural gas, i.e. ,methane, are readily available in several geographical areas. Especially attractive are the huge quantities of methane in the North Slope area of Alaska, since there are remote areas nearby which are suitable as a test site. The methane can be produced and safely transported to the test site by a common pipeline. However, the test site does not have to be in close proximity to the methane production area since the methane can be gathered and safely pipelined for long distances as is now commonly done in supplying energy to areas remote from the production area."

The idea of using the North Slope for nuclear sized weapons testing is not new. It is a myth that the North Slope is some big wasteland suitable only for creating craters with nuclear-size devices. This is home for about 8,000 Alaska natives, and has been for thousands of years. This area also supports significant animal life which the United States has decided to preserve by carefully regulating development, but the balance is delicate. In the authors' opinion, the North Slope is not the place for explosions of the size contemplated in this patent.

Chapter Sixteen

TURNING ON A BILLION WATTS

The actual HAARP instrument - the "ionospheric heater", as it is described by the military was designed as a modular unit so that it could be increased in size fully utilizing all previously constructed parts. In other words, they could make it bigger and bigger without abandoning the parts already installed. The "proof-of-concept" stage of the program could change smoothly to a full weapon system phase. Moreover, the entire system could be relocated anywhere in the world in a few months time.

This is an important factor in enlarging or relocating the facility. The first phase of the HAARP heater construction is completed and began testing in December, 1994, with testing scheduled through 1995. The second phase of the contract is set up to increase the power thresholds of the heater several times. Phase one of the project will yield an effective radiated power of one gigawatt, according to the records, with the second phase of the project having an effective-radiated-power of "at least lOOdbW", which is equal to 10 billion watts of power. 163 This concept was illustrated by Princeton, New Jersey, physicist, Dr. Richard Williams. While commenting on the HAARP project he said,

"My main abjection to HAARP is that they intend to dump electromagnetic radiation into the upper atmosphere at very high power levels...The radiated power level will be between '90 dbW and 100 dbW'...They refer at one point to the need to go 'at least' 100 dbW, One way to visualize this power level is that a 10-billion watt generator, running continuously for one hour, would deliver a quantity of energy equal to that of a Hiroshima-size atomic bomb. "164

This is a significant amount of energy, when beamed into a dynamic portion of the planet's upper atmosphere in order to create artificially controlled high energy interactions.

In the most elusive document, the future hope of the program planners was shown to be on the order of 100 gigawatts (100 billion watts) of effective radiated power. 165 This is futuristic because power sources are not available at this location to provide the required input power to gain this output.

The effective-radiated-power, in a focused beam, which HAARP produces can be modulated in a number of ways, giving the operator an incredibly versatile weapon. The versatility of the system is disclosed in both the APTI patents and other government documents.

163 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990,
164 Letter to Ryan Ross, Natural Resources News Service from Dr. Richard Williams, Physicist, Princeton University. November 7, 1994.
165 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher; October 22, 1991.

There has always been some confusion on the part of many HAARP opponents over the power used in the HAARP "heater". The government explained this as, "a difference between 'total radiated power' and 'effective radiated power' (ERP). That difference is antenna gain, which in HAARP's case is a factor of nearly 1000 (at 10 MHz)."166 What this means is that to get to one gigawatt of output requires one megawatt of input power which can be delivered by the on-site generators. Another way to state this would be: one megawatt of input power is equal to one million watts, multiplied by one thousand (antenna gain). This will yield one billion watts of effective radiated power - one gigawatt.

1 megawatt x 1000 = 1 gigawatt = 1 billion watts ERP

166 Letter From John Heckscher, HAARP Program Manager, Department of the Air Force, Phillips Laboratory, to Dr. Arther Grey, Secretary, Spectrum planning Subcommittee, National Telecommunications Information Administration, United States Department of Commerce, November 17,1994.

Chapter Seventeen

NUCLEAR EXCAVATION CREATING THE BAY

The University of Alaska, Fairbanks, in its zeal for recognition as a leader in geophysics and engineering, has a marred history. "Project Chariot" was a program proposed as part of "Project Plowshare" which was designed to find peaceful uses for nuclear energy. This project was researched by Dan O'Neill and reported in his 1994 book, The Firecracker Boys. The project was promoted by the Lawrence Radiation Laboratory, which planned to detonate six thermonuclear bombs underground to excavate a harbor at Cape Thompson, Alaska. The plan of the project organizers was that if this application of nuclear technology could be tested on United States soil these technologies could be easily promoted in other friendly countries, This would enable, for example, easy excavation of a new Suez or Panama Canal, both of which were in the minds of program planners. Project Plowshare was another Jules Verne story which was only too true.

The idea that a few activists could stop these types of experiments, even during the peak of the "Cold War", was amazing. Equally outstanding are the ongoing efforts of "NO HAARP' members in slowing and perhaps preventing the environmental vandalism contemplated by these new military planners.

Is the HAARP project another error in the judgment of the military, using the University and others in Alaska? Are they playing with the same incredible level of power that Edward Teller tried to sell Alaska in the past with Project Plowshare? Dr. Teller returned to Alaska in 1987 to promote the Star Wars defense initiative. He was proposing to install a laser-like weapon on the North Slope of Alaska, These new system details were not openly discussed, because "Star Wars" systems are classified. From the tone, and content, of his presentations however, we deduce that what he was promoting in 1987 may have been a new and complex weapon system the HAARP project.

When Dr. Bernard Eastlund, the inventor of much of the innovative HAARP technology, described his ideas they sounded a lot like Star Wars. He said his invention would allow many of the same effects achieved with satellite deployed systems, but from the ground. The use of ground, rather than satellite systems, was explained by Eastlund in a recent interview when he said, "In other words, you radiate energy up there in such a way that you accelerate the electrons without using a machine up there. That's the advantage" 167. This allows steering, focusing, modulating, and otherwise manipulating, to the will of the operator, provided the operator knows the frequencies and wave forms necessary to change the electromagnetic structure of ionospheric chemicals and conditions. The ability to manipulate the ionosphere is critical to a planetary shield, which was one of the applications defined by Dr. Eastlund and referred to in his, and the other, patents assigned to APTI.

167 Interview with Dr. Eastlund by Jeane Manning, February 20,1995.

The advantage of a ground based system is its limited vulnerability to attack. To position a ground based Star Wars system within the United States would mean that a country wishing to destroy it would have to enter the territory of the United States, which would be an overt act of war. The use of this system will have possible ramifications throughout the world. Those transmitters already operating have been reported by some to have had negative effects beyond the borders of the countries using them. 168,169 Even though firing up these new heaters would violate the interests of the majority of humans on the planet, by impinging on internationally recognized free spaces, the project moves forward in the interest of "science" and one country's "national security". At whose expense, and under whose control, is the naturally occurring global shield - the ionosphere - being vandalized?

Eastlund went on to talk about his patents and what he envisioned by putting so much energy into the ionosphere. He discussed creating a "mirror" and bouncing radio waves off of it in order to gain a number of effects. These are the same effects described in the February 1990 HAARP document[170] put out by the military and in a later 1991 report buried by theml71. In these two reports they disclosed the development of an "Artificial Ionospheric Mirror (AIM)". In fact, a careful reading of the Eastlund patents and the nine other patents uncovered in our research and the HAARP Documents read as though they were written by the same person. As Eastlund said, "If you read my patent, one of the things I do is put a burst up and make the mirror, and there's a way of doing a lot of things with a ground-based system. At the time, SDI (Strategic Defense Initiative, Star Wars) was a very big program. Everybody wanted to put things up in space to do these things; this was a real alternative approach to it, a ground based system." 172

Dr. Eastlund's system was Star Wars without the vulnerability of satellites, but with a lot of other implications. In August 1991, Peter Koert was granted a patent for a system which could produce an Artificial Ionospheric Mirror composed of a plasma layer which could be tilted. In his patent he cites the earlier work of Dr. Eastlund. 173 Koert was also one of the "key personnel" identified in the contracts between APTI and the United States military for building the HAARP transmitter. 174 The HAARP system provides a "proof-of-concept" system for demonstrating this technology. The patent issued to Koert was one of several of his patents useful to the HAARP project, all of which were assigned to APTI, as shown in the United States government's own records.

In February, 1995, the Star Wars missile defense shield was supposed to be dead. The United States House of Representatives by a 218 to 212 voted to kill the

168 Scorched Earth: The Military's Assault on the Environment, by William Thomas, New Society Publishers, Chapter 11.
169 Super-Memory: The Revolution, by Sheila Ostrander and Lynn Schroeder, pages 292-304.
170 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.
171 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher; October 22,1991.
172 Interview with Dr. Eastlund by Jeane Manning, February 20,1995.
173 United States Patent Number 5,041,834.
174 Office of Naval Research Contract Number N00014-92-C-0210.

program.175 Yet HAARP continues on while the motives of the military are hidden from the world.

In 1962, Project Plowshare was stopped because the project was identified as too risky and unnecessary. It was discontinued because the scientists were able to conduct their "proof-of-concept" experiments in Nevada (where objections were not presented by the populace, and the damage not disclosed by the government until decades later). It was also finally admitted by the government that these uses were unsafe and had to be cast aside, in the end, as international disarmament talks conducted through the 1960's and 1970"s. So ended the concept of nuclear excavation and Dr. Teller's "safe" use of nuclear energy. Perhaps its time we took a harder look at HAARP?

175 GOP's Military Revamp Stumbles on 'Star Wars', by David Hess, Knight-Ridder Newspapers, reported in the Anchorage Daily News, February 16,1995, pg. A3.

Chapter Eighteen

THERMONUCLEAR WEAPONS REPLACED BY ELECTROPULSE

Patent number 4,686,605, issued August 11, 1987 to Bernard J. Eastlund and assigned to APTI. is one of three related patents by the same inventor. The primary patent, once demonstrated to be effective to the satisfaction of the patent examiner, was sealed under a National Security Order for a year in the late 1980's. The patent is quoted as follows:

"In the past several years, substantial effort has been made to understand and explain the phenomena involved In belts of trapped electrons and ions, and to explore the possible ways to control and use these phenomena for beneficial purposes. For example, in the late 1950's and early 1960's both the United States and the U.S.S.R. detonated a series of nuclear devices of various yields to generate large numbers of charged particles at various altitudes, e.g. 200 kilometers or greater." 176

The Eastlund patented technology effectively replaced the electromagnetic pulse effects which were previously created by atmospheric thermonuclear detonations. This particular Eastlund ionospheric heater application took the concept to a new level of control and manipulation not previously possible. To gain the ability to "control" the processes with a non-radioactive producing technology is viewed as highly favorable for military planners. Radio frequency radiation (RFR) can produce negative health effects, the mechanism by which these effects occur is not well understood enough to raise the same level of concerns as thermonuclear fallout eventually did. However, the effects of RFR can have serious health consequences as indicated in numerous studies conducted by the military. These health effects have never been adequately disclosed to the American public or international community by the HAARP project planners.

The Eastlund patent went on;

"This can cause confusion of or interference with or even complete disruption of guidance systems employed by even the most sophisticated of airplanes and missiles. The ability to employ and transmit over very wide areas of the earth a plurality of electromagnetic waves of varying frequencies and to change same at will in a random manner, provides a unique ability to interfere with all modes of communication, land, sea, and/or air, at the same time. Because of the unique juxtaposition of usable fuel source at the point where desirable field lines intersect the earth's surface, such wide ranging and complete communication interference can be achieved in a reasonably short period of time...Thus, this invention provides the ability to put unprecedented amounts of power in the earth's atmosphere at strategic locations and to maintain the power injection level, particularly if random pulsing is employed, in a manner far more precise and better controlled than heretofore accomplished by the prior art, particularly by detonation of nuclear devices of

176 U.S. Patent #4,686,605.

various yields at various altitudes...Further, by knowing the frequencies of various electromagnetic beams employed in the practice of this invention it is possible not only to interfere with third party communications but to take advantage of one or more such beams to carry out a communications network even though the rest of the world's communications are disrupted. Put another way, what is used to disrupt another's communications can be employed by one knowledgeable of this invention as a communication network at the same time. In addition, once one's own communication network is established, the far-reaching extent of the effects of this invention could be employed to pick up communication signals of others for intelligence purposes." 177

"This invention has a phenomenal variety of possible ramifications and potential future developments. As alluded to earlier, missile or aircraft destruction, deflection, or confusion could result, particularly when relativistic particles are employed. Also, large regions of the atmosphere could be lifted to an unexpectedly high altitude so that missiles encounter unexpected and unplanned drag forces with resultant destruction or deflection of same. Weather modification is possible by, for example, altering upper atmosphere wind patterns by constructing one or more plumes of atmospheric particles which will act as a lens or focusing device. "178

It should be pointed out that the device invented by Eastlund would be ideally employed where there were large sources of natural gas and that it had to be erected in the most northern latitudes possible, to take advantage of the location where the earth's naturally occurring lines of force intersect the planet. In the patents, he recommended the North Slope of Alaska, where the largest reserves of natural gas in the United States are found and where these lines intersect the planet. Moreover, Atlantic Richfield Company (ARCO) was the parent company of APTI, the assigned owner of the Eastlund patents, and the owner of trillions of cubic feet of natural gas on the North Slope. 179 APTI became the initial HAARP contractor.

In 1987 Dr. Edward Teller described a new component of Star Wars technology, a laser like weapon for the North Slope of Alaska. Could HAARP be part of the Star Wars weapons system being promoted in 1987 by Dr. Teller? We believe that this is the case, and that what HAARP represents is a first stage "proof-of-concept" undertaking which, if proven valid, will expand to a full-blown military program. The idea of a ground-based versus a satellite-based defense shield is an important consideration in that satellites arc significantly more vulnerable and costly to repair once launched into orbit. Moreover, to stop a United States ground based system would require a terrorist attack or invasion. That would be an overt act of war on the part of an adversary. If deployed from ground based locations in the United States, or within the territorial boundaries of our allies, the shield has distinct military advantages.

While the currently constructed and planned future expansion of HAARP may not be large enough to create all of the Eastlund effects, it is of sufficient size to

177 U.S. Patent #4,686,605.
178 Ibid,
179 United States Patent No. 4,686,605 issued August 11, 1987 to Bernard J. Eastlund and assigned to APTI, Inc.

test many of the ideas in the patents. 180 Military spokesmen deny that they are using any of the Eastlund ideas; however, careful review of the materials lead to the inescapable conclusion that the military is misleading the public again. Moreover, it was reported by Dr. Eastlund in a National Public Radio broadcast in 1988181 that the military had tested some of the ideas in the patents before removing the secrecy orders. In a more recent interview, this fact was again confirmed by Dr. Eastlund. 182 A review of the other nine patents originally held by APTI, when overlain on the military planning documents, leaves researchers with an understanding of this new weapon system experiment - clearly countering the military's public pronouncements.

Going back to 1984, the United States Air Force's Major Norman H. Ruotanen, wrote a paper which became a chapter in a most interesting publication. "Nuclear and Electromagnetic Warfare in Low-Intensity Conflict". The chapter considered the use of nuclear weapons for creating electromagnetic pulses (EMP) in order to disable electronic systems of adversaries. The Major went on to discuss a less intrusive method and perhaps a method which could be better controlled. He describes the system:

"Nuclear EMP devices are not the only way to create damaging electromagnetic pulses. Electrical power supply, power conditioning, and microwave source device technologies have advanced to the point where one could feasibly generate electromagnetic pulses in the radio frequency regime by conventional means that are powerful enough to disrupt, damage, or destroy systems utilizing the highly susceptible electrical components. "183

"A conventional EMP weapon would somewhat resemble a very powerful radar system. It could be deployed on a space platform, in an aircraft, or on a truck or ship. Unlike the nuclear EMP devices that illuminate large areas with damaging EMP, the conventional system would be used against specific point targets. At long ranges, the EMP could disrupt or upset target electrical systems. At closer ranges, electrical components in the target would be burned out and permanently damaged. Both aggressor and the defender in the low-intensity conflict would have many uses for such conventional EMP weapons. This type of electromagnetic warfare is quite bloodless and, therefore, quite appealing when international opinions are considered...Although this electromagnetic warfare is a relatively benign form of combat that generally kills systems, not people, some antipersonnel applications are currently being considered, such as the use of the very powerful microwave devices to confuse, disable, or even kill the enemy. The use of these advancing technologies for intelligence gathering, disinformation, and enemy interrogation is even speculated.. "184

The military planners and strategists of the early-to-middle 1980's were

180 Interview with Dr. Eastlund by Jeane Manning, February 20,1995.

181 Interview with Dr. Eastlund by National Pubic Radio, 1988.

182 Interview with Dr. Eastlund by Jeane Manning, February 20, 1995.

183 Low-Intensity Conflict and Modern Technology, Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.

184 Ibid. pages 245-246.

convinced of the long predicted possibilities of radio frequency radiation weapons systems. Given this interest, it becomes obvious why the military was so quick to develop the Eastlund technology. His ideas were the missing link which stimulated the series of other patents needed for the HAARP program. The HAARP system, with its collection of technological breakthroughs, would provide a tool for performing its disruptive tasks over a wide geographical area and perhaps eventually over the entire planet.

Obviously these concepts were already well understood by the military in 1984, The HAARP system is the largest concept-delivery system ever built by the military for this technology. The use of HAARP for these applications is spoken about throughout the government records, excluding the uses against humans. This is where the information and military disinformation becomes cloudy. What is clear is that HAARP can be used for these purposes. Meanwhile, it is still being misrepresented by the military as only a scientific research tool.

Chapter Nineteen

CHARGED PARTICLE RAIN CRITICAL OMISSION

An article in Science News in 1982 said joint research carried out by scientists from Lockheed Space Sciences Laboratory in Palo Alto, California and Stanford University had found that very low frequency transmitters (HAARP will produce emissions in these ranges in some applications) caused streams of particles to rain down from the outermost regions of the atmosphere. The research was funded by the Office of Naval Research (one of the project controllers of HAARP). Their experiments confirmed that "even low frequency radio waves leak into the magnetosphere, causing the phenomenon. There the radio signals are amplified as much as 1,000 times, altering the motion of free electrons thousands of miles out in space."185 Even though one of the scientists involved in HAARP, Dr. Amran Iman, was quoted in the article, none of this information was in the Environmental Impact Statement on HAARP. This scientist's involvement in the current project was confirmed by John Heckscher, HAARP Program Manager, in a letter responding to a request for information.186 Dr. Iman, at the time of the Stanford University research, saw this as an opportunity to use the magnetic lines of force in the upper atmosphere to enhance communications and to be able to conduct controlled experiments in the ionosphere (which later became an expressed area of interest for the HAARP program).

As mentioned in Chapter Nine, Stanford University's work goes back even further, to the research efforts of Robert Helliwell, who revealed in 1975 that we were already inadvertently altering the ionosphere with Very Low Frequency (VLF) radio waves from power lines. While working in Antarctica, he discovered that these energy signals could be multiplied by up to 1000 times by a coherent interaction With particles in the radiation belts. These radio waves cause an "electronic rain in the ionosphere, and this inevitably alters weather patterns in the lower atmosphere." 187 It turned out that the Department of Defense (DoD) was working on this concept before 1976.188 The use of "coherent VLF" was also discussed with John Heckscher, HAARP Program Managerl89, regarding geophysical probing for earth-penetrating tomography applications of HAARP. In that discussion, he did not mention this multiplying factor (which happens when the signal in the VLF range reaches the ionosphere). This 1000-times multiplying factor creates a huge question, a big hole in the Environmental Impact Statement, and maybe disruption in normal weather patterns. This "coherent signal" is also mentioned in a communication from Paul C. Roosa, Jr., Chairman of the United States Department of Commerce, National Telecommunications and Information Administration, Inter-department Radio

185 "VLF: Getting Particles Excited", Science News, December 18 and 25, 1982, pg.392.
186 Letter From John Heckscher, HAARP Program Manager, Department of the Air Force, Phillips Laboratory, to Dr. Arther Grey, Secretary, Spectrum planning Subcommittee, National Telecommunications Information Administration, United States Department of Commerce, November 17,1994.
187 The Cooling, by Lowell Ponte, 1976, pg 169.
188 Ibid.
189 Interview with John Heckscher by Jeane Manning, 2-21-95.

Advisory Committee, Spectrum Planning Committee which oversees frequency assignments and reviews interactions of broadcasters.

This multiplying factor was either ignored by Roosa's group, or they lacked the understanding of this upper atmospheric interaction. 190 The research into "charged particle rain" started in the Antarctic, moved to Stanford and then to Alaska - from the bottom of the globe to the top of the world. The problem with this being omitted from HAARP documents is that these energy/atmospheric interactions, at current levels of man-induced radiations, are already causing possible weather and other environmental hazards. Increasing the energy deliberately transferred to the upper atmosphere through ionospheric heaters becomes a horrendous act of bad judgment. In fact, in the early 1990's it was reported by Dr. W. Volkrodt of Bad Neustadt, West Germany, that these low frequency radio radiations might be responsible for both environmental and human health problems.191

Throughout the press releases and "fact sheets" spewed out by the military representatives on the project, the focus is on the innocuous academic/scientific research inquires made via HAARP. This is a deception, and deflection from the real "heart" of the program as described in the early planning sessions on the project. A full list of the participants in the planning session was released, and it includes all of the principal players from the universities, APTI, and the military. These same individuals worked together, over the next several years, deflected public attention away from the project.

How much these people individually knew of the project's real intent is unknown. Following the standard military approach to these types of efforts, we assume that participants were only given the pieces of information they needed to do their jobs. The research shows that APTI was a Star Wars subsidiary of Atlantic Richfield Corporation (ARCO), and some of the "key personnel" assigned by APTI to the project were the inventors of some of the patents eventually discussed in the military records on the HAARP project.

The HAARP system is a tool, a radio frequency transmitter and broadcasting system of immense power. From the perspective of the geophysicist, it has certain applications, but to the physiologist and behaviorist perhaps it offers a much different set of possibilities. Regard-less of the public relations proclamations by Heckscher and others, the record says it all,

"The heart of the program will be the development of a unique ionospheric heating capability to conduct the pioneering experiments required to adequately assess the potential for exploiting ionospheric enhancement technology for DoD purposes."

* * *

190 Letter To Mr. Larry D. Gondek from Paul C, Roosa, Jr., Chairman of the United States Department of Commerce, National Telecommunications and Information Administration, Interdepartment Radio Advisory Committee, Spectrum Planning Committee, December 15, 1994.
191 American/European magazine, Raum & Zeit, Vol. 1 No. 2, 1989, pages 52-57,

Are these DoD purposes for innocuous scientific research or for someone's vision of high-tech hardware for enhancing the warfare capability of the United States? 192

192 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.

CHAPTER TWENTY

BLURRED VISIONS OF THE MILITARY

In a fact sheet issued by the Office of Naval Research and Phillips Laboratory about HAARP dated November 4, 1993 the following is written:

"The proposed research will be undertaken using high power radio transmitters to probe the overhead ionosphere, combined with a complement of modem scientific diagnostic instruments to investigate the results of the interactions. "193

"HAARP will be constructed at auroral latitudes in Alaska. A unique feature of the research facility would be a high-power high-frequency radio transmitter with the capability of rapidly steering a narrow beam of energy toward a designated region in the sky. (This innovation of the Eastlund patent makes it the most unique ionospheric heater in the world.) Similar, though less capable, research facilities exist today at many locations throughout the world and are operated routinely for the purpose of scientific investigation of the ionosphere. In the U.S. such systems are located in Arecibo, Puerto Rico, and Fairbanks, Alaska. Other installations are at Tromso, Norway; Moscow, Nizhny Novgorod and Apatity, Russia; Kharkov, Ukraine and Dushanbe, Tadzhikistan. None of these existing systems, however, have the combination of frequency capability and beam steering agility required to perform the experiments planned for HAARP. "194

A significant difference between what these other facilities are capable of is that HAARP was designed to focus the radiofrequency transmission into a narrow beam. 195 At the time that Eastlund invented his particular phased array method of focusing radiofrequency radiation, the best which could otherwise be achieved, from the ground to altitudes of 100 kilometers, was about one millionth of one watt per cubic centimeter. Using a full sized Eastlund ionospheric heater, power levels of one watt per cubic centimeter could be achieved, a million times increase in delivered power. Even with a smaller array, like the first phase of HAARP, a comparison to the other ionospheric heaters cannot be fairly made because even the smaller HAARP transmitter would have many times more power than anything in the world at the present time, in terms of power delivered into the ionosphere. The other ionospheric heaters spread the radiation out, rather than focusing it like the HAARP transmitter. 196

The way the energy is focused can be visualized using one of the diagrams Eastlund submitted to the patent examiner when getting his first patent filed. The diagram shows the old technology beaming the energy up to the ionosphere in a cone of power with the wide end of the cone reaching the ionosphere. The new technology utilizes the opposite approach: the beamed energy is focused to a point in the

193 HAARP Fact Sheet, November 4, 1993, issued by Phillips Laboratory.
194 Ibid.
195 HAARP Fact Sheet, March 2,1995, issued by Phillips Laboratory.
196 Interview Dr. Eastlund by Jeane Manning, February 20, 1995.

ionosphere. It is this concept which differentiates Eastlund's concept from that of other existing radio transmitters used for ionospheric heating. It is this concept that the military is moving toward at the HAARP site, although a full-size Eastlund system, at this time, is not being used. The second phase planned for HAARP will have between 4,700,000,000 and 10,000,000,000 watts of effective radiated power (ERP) coming off the antennas at ground level. This was what was planned according
to the contract for construction, 197 which specified ERP levels of "at least" 10 billion watts. However, this was not what was "desired" in terms of upper power level thresholds. What was "desired" by the planning team was 100 billion watts of ERP, according to the record, ten times the phase two level of the project. 198

"An exciting and challenging aspect of ionospheric enhancement is its potential to control ionospheric processes in such a way as to greatly improve the performance of C3 systems (C3 systems are Communications, Control and Command systems. The military refers to them as C3. These are usually linked to Intelligence as C31 systems.). A key goal of the program is the identification and investigation of those ionospheric processes and phenomena that can be exploited for DoD purposes, such as those outlined below... Generation of ELF waves... Geophysical probing... Generation of ionospheric lenses...Electron acceleration...Generation of geomagnetic-field aligned ionization... Oblique heating... Generation of ionization layers below 90KM... the most exciting and challenging aspect of ionospheric enhancement is its potential to control ionospheric processes in such a way as to greatly enhance the performance of C3 systems (or, to deny accessibility to an adversary). "199

The military goes on to describe their excitement about the possibility of "seizing" control of the ionosphere and bending it into the shape which serves their purposes. These are the statements within the government reports which ring the loudest with the inflections of Eastlund, the inventor of the primary APTI patents. A look at the government claimed capabilities follows, and is explained further in other sections of this book.

Geophysical Probing

In the 1990 planning meeting summary, HAARP planners devote few words to geophysical probing. They say that this is a "by-product" of other applications of the ionospheric heater, the HAARP transmitter. As the years moved forward, however, this use becomes increasingly important to the project. The idea that this tool, HAARP, could be used for earth probing purposes is never explored in the federal Environmental Impact Statement on the project. That document says that the radio-frequency radiation coming from HAARP will be directed upward and would not have an affect on surface areas, while other HAARP records describe and diagram a ground effect. Yet, it is precisely this use which may have the most far-reaching effects on animal migration patterns and human health.

197 Office of Naval Research, Contract Number N00014-92-C-0210, ARCO Power Technologies Incorporated as Contractors, September 16,1992 with Amendments through October 19,1993.

198 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher; October 22, 1991, page 182.

199 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.

To better understand this use of HAARP - earth-penetrating tomography - we need to explore a few different documents. First, let's look again at that 1990 HAARP summary,200 which includes a section dealing with the generation of extremely low frequency and very low frequency (ELF and VLF) waves. These energy waves are sent up from the antenna array (HAARP) in such a way so it "produces a virtual antenna in the ionosphere for radiation of radio waves" back to earth. The antenna created in the ionosphere then radiates, or sends back, the pulsed frequency,
It then moves through the earth, giving the military the ability to locate underground anomalies such as shelters, nuclear facilities, oil fields, tunnels and other natural and man made formations.

The second document which explains this application is not revealed until much later in the program. In the National Defense Authorization Act for Fiscal Year 1995, the United States Senate stops additional spending on the project until the military outlines a plan which includes a full earth-penetrating tomography program. The report specifies:

"This transmitter in Alaska, besides providing a world class research facility for ionospheric physics, could allow earth-penetrating tomography over most of the northern hemisphere. Such a capability would permit the detection and precise location of tunnels, shelters, and other underground shelters.,."201

The Senate went on to criticize the military for not bringing forward a complete plan for implementation of this specific capability as part of the HAARP program. They told the military to come back with a more comprehensive plan before they could get any more money.

The third piece of information in this part of the puzzle came out in a radio interview conducted on December 23, 1994, by Linda Moulton Howe with the HAARP program director, John Heckscher. Heckscher expressed his frustration in not being able to move forward on the project because of the Senate action. He made clear that HAARP could not continue unless the "nonproliferation people" put in the proper documents which would clarify earth-penetrating tomography as a HAARP project mission. The non-proliferation people, referred to by Heckscher, are those in the Pentagon and elsewhere who develop the plans for locating underground military installations, especially nuclear research and development facilities.

Our research, and critiques by independent scientists, raised questions about whether or not the earth-penetrating tomography application would work in a "hot war" environment. For it to work there need to be instruments on the ground, or traversing the ground at very, very low altitudes. Our technical review indicated that it would be difficult to do this in combat. But it could be used in other situations. It could be used to verify nonproliferation agreements and other peace agreements where the country to be probed allowed the U. S. military to install ground sensors.

200 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.
201 The National Defense Authorization Act for Fiscal Year 1995,103rd Congress, 2nd Session, Report #103-282, Calendar No. 459, Report to Accompany S.2182, Committee on Armed Services United States Senate, June 14 (legislative day June 7)1994.

Earth-penetrating tomography could also be used for minerals, and oil exploration, as referred to in the Anchorage Daily News:

"UAF researchers have plans for HAARP's radio waves when they bounce back to the Earth. They hope to harness the energy waves after they hit the ground with
a small antenna affixed to a helicopter. They might be able to use the radio waves to explore for mineral deposits and even oil... "202

Searching for oil is one of the many HAARP experiments which is not part of the estimated $175 million budget for the first two phases of the project.

To find out more about earth-penetration mapping the authors contacted HAARP program manager Heckscher in late February, 1995. He said it would use "in terms of frequency, like 10 or 20 Hertz (pulses per second) or maybe one Hertz, one cycle per second type waves."203 This range of frequencies is a very important point. These frequencies are the same dominate frequencies within which the human brain normally operates! This potential impact on people will be explored further in another chapter.

The idea of using HAARP for earth-penetrating tomography was anticipated from the very beginning of HAARP. That this tool could be used to produce this "by-product" was always known but downplayed in the records. However, the usage must have been promoted in selling the project to the United States Senate, The unexpected result was that the Senate gave priority to this aspect.

The fact that the system will send a huge amount of energy into the ionosphere, and return a large portion of that energy to the earth, with possible ionospheric amplifications or induced charged particle rain, is alarming. Potential environmental implications have not been fully disclosed and most likely are not well understood.

These uses were never discovered by those opposed to the HAARP project until late 1994, and only confirmed by a review of the Congressional Record at that time. Formal objections to the nondisclosure of the biological effects of ELF on living things in the earth-penetrating tomography application of the technology were filed with various governmental agencies, but to no avail. We could not clearly find out the facts until late January 1995, much after the regulating authorities had already granted the go-ahead for HAARP testing. The only remaining barrier to HAARP raised by the United States Senate was the question of funding. This question was partially resolved in the 1996 defense budget funding that included $10 million for HAARP, 20% of the total allocated for counterproliferation projects.

Generation of ELF/VLF Waves

These kinds of waves are used for DoD communication systems. Currently, waves are produced "from the Navy's existing antenna systems in Wisconsin and

202 "Transmitter Plan Leaves Public Uneasy", Anchorage Daily News, pages B-1 and B-3.
203 Interview of John Heckscher, HAARP Program Manager, with Jeane Manning, 2-21-1995.

Michigan. Because this area of research appears especially promising, and because of existing DoD requirements for ELF and VLF, it is already a primary driver of the proposed HAARP research program."

As a "primary driver" this again shows that the project is important to the military in terms of Department of Defense (DoD) applications. Beyond the communication possibilities, these types of radio frequencies could be used to manipulate the radiation belts of the ionosphere in a manner which would allow satellites to operate safely in these regions without damage to the satellites' electronics. This use was discussed in the Eastlund patents as well as the HAARP records.

The possibility of using HAARP for these multiple purposes is particularly attractive to the military at a time when funding is increasingly a greater issue for all United States governmental agencies. The HAARP system could consolidate costs of several otheT defense systems by combining them into one tool.

Another consideration that is not discussed in the Environmental Impact Statement, to any significant degree, is the raging global scientific debate on the effects of extremely low frequencies (ELF) on living organisms, including human beings. The military's representative, Dr. Klaunenberg, during one of the hearings on the project, made a point of referring to a large file containing materials on the various radiations emitted by HAARP and then stated, "All that didn't go into the Environmental Impact Statement (EIS); as a matter of fact, that reduced to just a couple of lines. And 1 know what your, wheTe you're coming from and 1 share your concerns."204

The military, particularly the Air Force and Navy, have extensive research on the negative effects of ELF. These effects have been well documented with basic research which is expanding geometrically in volume every year. The government handily deflected the concerns raised in the public hearings in Alaska by playing down the results of this research and minimizing the risks. This was the same way the government promoted other military systems while deflecting public concern in such areas as nuclear testing experiments205,206, LSD experiments on unknowing individuals207, 208, radiation experiments on people who were not informed of the risks and in many other areas - under the guise of National Security209, 210.

204 Final Environmental Impact Statement Volume II, Proposed High Frequency Active Auroral Research Program, July 1993, pg. 10-42.
205 staff Memorandum, Advisory Committee Staff to the Member of the President's Advisory Committee on Human Radiation Experiments, June 27,1994, (provided by: International Committee lor The Convention Against Offensive Microwave Weapons)
206 National Journal, Volume 27, No. 18, "Rays ot Terror" by Margaret Kritz, May 6, 1995, Pages 1099-1109. (provided by: International Committee for The Convention Against Offensive Microwave Weapons)
207 Report to the President bv the Commission on CIA Activities Within The United States. June 1975, pages 225-231.
206 Staff Memorandum, Advisory Committee Staff to the Member of the President's Advisory Committee on Human Radiation Experiments, June 27, 1994. (provided by: international Committee for The Convention Against Offensive Microwave Weapons)
209 Ibid.
210 National Journal, Volume 27, No. 18, "Rays of Terror" by Margaret Kritz, May 6,1995, Pages 1099-1109. (provided by: International Committee for The Convention Against Offensive Microwave Weapons)

Electron Acceleration

This trick of HAARP would allow the military to alter the ionosphere in a way which would effectively block satellite observation of areas under a selected portion of the ionosphere. Thus the military could more easily "condition the ionosphere so that it would support HF (high-frequency) propagation during periods when the natural ionosphere was especially weak. This could potentially be exploited for long range (Over-the-Horizon) HF communication/surveillance purposes."

This use was previously envisioned by Eastlund and others.

The HAARP facility was located at the site originally intended for the "Over the Horizon Radar" facility, which was dropped after the end of the Cold War according to the government record. The HAARP facility will allow the government to replace the "Backscatter Radar" with a new, more versatile facility, in a more bang for the buck application!

There were other patents controlled by APTI which grew out of the Eastlund patents which could be used in this application. They are U.S. patent numbers 4,999,637 and 5,041,834, which are exactly what the government seemed to be seeking and now has achieved in HAARP. The military claimed that they were not using the Eastlund patents for this particular use, but what they couldn't deny was that the patents they were using were the outgrowth of the Eastlund concepts. These two patents specifically refer to Eastlund's work in their conceptual development. The HAARP program offers the military the over-the-horizon radar capability, again demonstrating the sort of all in one tool that HAARP is designed to provide.

The projects that HAARP technology replaces make it potentially one of the most powerful and cost-effective weapon systems yet developed by the military, while at the same time being potentially one of the most dangerous since the development of thermonuclear weapons.

Generation of Field-Aligned Ionization

In this section of the military documents describing HAARP, control of the ionospheric processes would allow the military to maintain communication above a nuclear disturbed ionospheric region, and would allow very long range detection of missiles. The document also mentioned a 1992 satellite experiment that tested this theory, using a "heater in Alaska".

The only other known heater in Alaska is HIPAS, at the University of Alaska facilities near Fairbanks (although this was not specifically named). HAARP was not yet constructed in 1992.

This use has to do with the control and manipulation of the ionosphere for military purposes. The technology which makes these effects is referred to in several of the patents held by APTI.

Oblique HF Heating

This area involves projection of the beam, to alter the ionosphere up to 1000 km or more from the heater. This is an interesting ability, considering the military - throughout their public relations efforts - has stated that the heater affected region would be mainly above the HAARP facility itself. The idea that the beam might be steered in a way which reached these lateral (side) distances was not fully disclosed in the Environmental Impact Statements. The point here is that the device can manipulate the ionosphere over a wide area and not just above the heater.

Oblique HF heating is useful for over-the-horizon radar, as well as for many of the other uses desired by the military. We talk about the steering elsewhere, when discussing the use of the HAARP transmitter as the military's long sought after radio frequency radiation weapon. This type of use was first publicly disclosed by an Air Force captain who was reporting on new technologies in a military conference in 1984.211 Such a weapon could disable humans and impair their mental functions, among other things.

Generation of Ionization Layers Below 90 km

This use has already been proven, according to the HAARP summary by the Air Force and Navy,

"The Air Force in particular has carried the concept, termed Artificial Ionospheric Mirror (AIM), to the point of demonstrating its technical viability and proposing a new initiative to conduct proof-of-concepts experiments."

This concept will lead to a number of other uses, including "long range, over-the-horizon, HF/VHF/UHF surveillance purposes, including the detection of cruise missiles and other low observables."

This again is the more bang for the buck military application which, on the surface, feels good to most taxpaying Americans. The idea that one tool can be used to achieve all of these capabilities is astounding. The idea that so many weapon systems of perceived adversaries could be rendered obsolete is far reaching in its implications. However, the risks are still not well defined in the documents issued by the government on HAARP. The project has not been reviewed because of the limited releases of information which has denied more-objective observers and other scientists the opportunity to consider the HAARP system. The fundamental question, as yet unanswered or even addressed, surrounds the risks associated with energizing this critical portion of our upper atmosphere.

The patents developed by APTI which describe these systems were discovered in researching this book in April, 1995. It then appeared obvious why

211 Low-Intensity Conflict and Modern Technology, Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.

military planners had included some of the "key personnel" in the APTI contract. Having the technology's inventors and innovators made the project that much more viable. The military contact had clear language which required the use of these key people. The contract said that substitution was not permitted without government consent. More-over, the military added that failure to assign these people to the project could result in forfeiture of the contract entirely[212].

Having the patents remain undiscovered until after the first phase of HAARP was constructed and tested reduced the possibility of the project being halted. What the discovery did prove was that HAARP was not just some university research project, but was the military tool always suspected by the "NO HAARP" compilers.

The press releases and information coming from the military on this project have continually downplayed its potentials. In the HAARP summary, the government discusses the need for a high-power heater. Meanwhile, in the public documents and the letters sent to Congress-men, state legislators and others insist that the HAARP project is no different than other heaters operating safely throughout the world. In the 1990 documents the governments says,

"...that at the highest HF powers available in the West, the instabilities commonly studied are approaching their maximum RF energy dissipative capability, beyond which the plasma processes will 'runaway' until the next limiting factor is reached."

What the HAARP planners go on to say, when referring to heating the ionosphere, is that they are certain that they can "drastically alter its thermal, refractive, scattering, and emission character over a wide electromagnetic (radio frequency) and optical spectrum."213 The difference with HAARP has to do with the power beam focusing ability of the transmitter, unlike anything operating elsewhere. Focusing the energy to a specific point is the unique aspect which planners were so enthused about.

In summary, according to the military records about HAARP, we have a project designed to prove the concepts originally discussed in February 1990 and hatched years before. The direction the military was heading in their research was finally possible with the invention of the Eastlund ionospheric heater - the most powerful directed multiple use energy weapon yet conceived.

According to the military, the device had the greatest set of possible uses. These are uses already proven by Eastlund to the satisfaction of the United States Patent Office and tested by the military. It was clear that if the military, in cooperation with the University of Alaska Fairbanks, could show that this new ground-based "Star Wars" technology was sound, they would both win. The military would have a relatively inexpensive secure defense shield within the economic reach of their planners, and the University would be recognized for the most remarkable

212 office of Naval Research, Contract Number N00014-92-C-0210, ARCO Power Technologies Incorporated as Contractors, September 16,1992 with Amendments through October 19,1993.
213 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.

manmade geophysical manipulation since atmospheric detonations of nuclear bombs. What would follow with the success of the testing would be the military megaprojects of the future, and huge markets foT North Slope natural gas.

Looking at the other patents which built on the work of Eastlund, it becomes clearer how the military intends to use the HAARP transmitter, It also makes governmental denials less believable. The military knows how it intends to use this technology, and has made it clear in their documents. The military has deliberately misled the public, through sophisticated word games, deceit and outright disinformation.

* The HAARP system could give the military a tool to replace the electromagnetic pulse effect of atmospheric thermonuclear devices, still considered a viable option by the military through at least 1986.214

* It could replace the huge Extremely Low Frequency (ELF) submarine communication system operating in Michigan and Wisconsin with a new and more compact technology.

* It could be used to replace the over-the-horizon radar system once planned for the current location of HAARP, with a more flexible and accurate system.

* It could provide a way to wipe out communications over an extremely large area, while keeping operator controlled communications systems working.

* It could provide a wide area earth-penetrating tomography which, if combined with the computing abilities of EMASS and Cray computers, would make it possible to verify many parts of nuclear nonproliferation and peace agreements.

* It could provide a tool for geophysical probing which would define oil, gas and mineral deposits over a large geographical area.

* It could even also be used to detect incoming low level planes and cruise missiles, making other technological advantages obsolete.

The above abilities seem like a good idea for all of us who believe in sound national defense and a secure world. These advances seem reasonable to those of us concerned with the large amounts of national productivity being spent on higher and higher cost weapon systems at a time when government spending is out of control.

However, the possible uses which the HAARP records do not explain, and which can only be found in Air Force, Army, Navy and other federal agency records, are alarming. Moreover, the disaster which could befall all of us on the planet by the reckless use of these power levels in our natural shield, the ionosphere, could be cataclysmic.

214 Low-Intensity Conflict ana Modern Technology. Lt Col, David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.

What the military fails to say is that they do not know what exactly will happen. It should be remembered that this project represents the largest energy levels yet played with by the big boys with their new toys. This project is an experiment, and experiments are done when we want to find out something that we do not already know. So, what will really happen? When we find the answer, we all may be out of luck and out of time.

Chapter Twenty-one

RACE WITH THE RUSSIANS

"Similar, though less capable, research facilities exist today at many locations throughout the world and are operated routinely for the purpose of scientific investigation of the ionosphere...None of these existing systems, however, have the combination of frequency capability and beam steering agility required to perform the experiments planned for HAARP. "215

The program handlers continued to talk to the public as if this ionospheric heater were really no different than any others around the world. Yet, while promoting the project and in internal communications, they couldn't resist talking about HAARP as the biggest "heater" in the world - more powerful than anything in existence. This technology is more than just the level of effective-radiated-power, or frequency/wave-form variability, or steering capability. The biggest factor is that in combination with these abilities, the device focuses power in a way which yields many, many times more delivered power to the ionosphere than anything on Earth resembling this device.

This device is a jump ahead in technology, beyond anything else. It is a leap like comparing a squirt gun to an artillery piece, and the effects are, to a great extent, unknown once the energy is released beyond certain thresholds. Yet, in answer to Congressional inquiries, citizen complaints and interagency requests for information, project manager Heckscher, continuously denies that the system is any different from what he and other previously said was already operating. He delivers this information in the form of sophisticated word games, The government craft of bureaucratese reaches new highs with the HAARP promoters.

In a 1990216 meeting that Heckscher attended, the record stated that "To date, (only) the Soviet Union has built such a powerful HF (high-frequency) heater. The highest ERPs (Effective Radiated Power) achieved by U.S. facilities is about one fourth of that. Presently, a heater in Norway, operated by the Max Planck Institute in the Federal Republic of Germany, is being reconfigured to provide 1 gigawatt of ERP at a single HF frequency. The HAARP is to ultimately have an HF heater with an ERP well above 1 gigawatt (on the order of 95-100 dbW); in short, the most powerful facility in the world..."217

Was the race with the Soviets part of the picture and the justification for spending the money? The Russians had been at the game a good deal longer and had a greater understanding of ionospheric heaters. Again, the emphasis on output size alone is not enough to describe the technology. It is the combination of size, focused power beaming, beam maneuverability, waveform generation and frequency -among a number of other unique capabilities - which make this system so powerful.

2TB HAARP fact sheet, Office of Naval Research, Phillips Laboratory, November 4, 1993.
216 HAARP HF Active Auroral Research Program, Joint Program Plans and Activities, Air Force Geophysics Laboratory, Navy Office of Naval Research, February 1990.
217 Ibid.

The issue of power has always been a bit on the confusing side to those trying to decipher exactly what this device would generate in output power through the antenna array and what it would take in input power to get there. This issue was finally cleared up in a letter by John Heckscher where he said, "There is a difference between 'total radiated power' and 'effective radiated power'. That difference is antenna gain, which in HAARP's case is a factor of nearly 1000 (at 10 MHz)."218 What was also new about this Eastlund invention is that it could focus the huge power levels onto a single point in the ionosphere. For the first time, the western military establishment could begin to use the new weapon capabilities.

The Soviets had been playing with their ELF and VLF toys for two decades by the time the HAARP transmitter was built. They had been testing their ideas and theories for use of radiofrequency in new weapon systems during those years. The Soviet radio frequency transmitters had been the source of much controversy throughout the West. Some in the United States and Canada had blamed such things as weather manipulation, mind control, radio interference and other unexplainable atmospheric events219 on the Soviet transmitters which created what became known as the "woodpecker" signal220.

The sales pitch for HAARP funding fell to the academics at the University of Alaska Fairbanks Geophysical Institute, and they had a friend in the powerful Senator from Alaska, Ted Stevens. It is doubtful that Stevens had been fully informed by these professors; the record indicates that he may have been duped into being their voice in the halls of Congress. Senator Stevens was quoted in a news article as he defended the funding of the HAARP program, It appears from the report that the Senator may have been left with incomplete information by the project promoters.

Harness the Aurora?

In mid-1990 Senator Stevens defended his project in a committee meeting when he said, "1 could tell you about the time when the University of Alaska came to me and said it might be possible to bring the aurora to Earth. We might be able to harness the energy in the aurora...". He went on to say, "No one in the Department of Defense, no one in the Department of Energy, no one in the executive branch was interested in pursuing it at alt. Why? Because it did not come from the good old boy network. So I did just what you say I should do. I got Congress to ear-mark the money, and the experiment is going on now. It will cost $10 million to $20 million. If it is successful, it will change the history of the world." The actual direct costs of the first phase of HAARP was about $25 million with the second phase estimated at $150 million. This does not include the numerous other projects related to, or complimenting, the HAARP program.

218 Letter From John Heckscher, HAARP Program Manager, Department of the Air Force, Phillips Laboratory, to Dr. Arther Grey, Secretary, Spectrum planning Subcommittee, National Telecommunications Information Administration, United States Department of Commerce, November 17, 1994.

219 Super-Memory : The Revolution, by Sheila Ostrander and Lynn Schroeder, pages 292-304.

220 Ibid.

Senator Stevens went to the floor of the Senate late in the summer of 1990 and declared, "We have in Alaska what I consider to be one of the most exciting research projects that I have ever encountered," He went on to say, "It is the experiments that are going on trying to determine if it is possible to harness the energy of the electrojet for the use of mankind." He said the project "has the potential of using a laser beam to be a conductor of this energy back to Earth...It is an experiment that, when 1 first heard about it, I thought someone had rewritten a new chapter of Jules Veme."221

"The research facility would be used to understand, stimulate and control ionospheric processes that might alter the performance of communication and surveillance systems...Potential applications of the HAARP research include developing DoD technology for detecting cruise missiles and aircraft and for communicating with submarines. Although HAARP is being managed by the Air Force and Navy, it is purely a scientific research facility which represents no threat to potential adversaries and would therefore have no value as a military target. "222

Again it appears that what is really being said is that this is not an operational weapon system, only a proof-of-concept system. It is designed to provide a better understanding for future uses as a weapon system. This is an outrageous statement, which plays on the ignorance of readers of the HAARP records, and could be equated to the suggestion that the development centers for the atom bomb during World War II were not potential military targets.

"As the result of a competitive procurement, the Air Force and Navy have awarded a contract to ARCO Power Technologies, Inc. (APTI) for the design and construction of the IRI and associated support facilities."223 APTI, according to liastlund, was set up to do one thing - develop his ideas into marketable technologies. APTI was not set up as a construction company or an ionospheric research organization. It was set up to exploit energy in a way which maximized a return to one of the world's oil giants, Atlantic Richfield Company. What Eastlund did was put ARCO into the Star Wars business until a company more suited to the project could be located to buy out their interests. That company was E-Systems. E-Systems' history and controversy has been documented by CBS's, 60 Minutes as well as by the Washington Post, and is discussed in this book.

The original bidders on the HAARP project were Penn State University, Raytheon and APTI.224 The chain of corporate events has been discussed previously, In June, 1994, APTI was bought out by E-Systems, which in April, 1995, was bought out by Raytheon Corporation. So, in the end, one of the project's losing bidders, Raytheon - one of the largest defense contractors in the world - came to own the technology and the contract.

221 "Porkpie in the Sky", Anchorage Daily News, We Alaskans , December 15,1991 pages 9-14.
222 HAARP Fact Sheet, Office of Naval Research, Phillips Laboratory, November 4, 1993.
223 Ibid.
224 Interview with John Heckscher, HAARP Program Manager and Jeane Manning, February 21, 1995.

Chapter Twenty-two

ENTRAIN THE BRAIN TO GO INSANE?

New technologies have incredible possibilities for improving the human brain potential. These technologies are being used to improve learning, memory, and for human behavior modification. The high-tech tools of the future are here now, and are being introduced into the market place. A leading writer in the area of brain technologies has been Michael Hutchison, who opened this field to lay people.

As Hutchison describes it, the brain operates within a relatively narrow band of predominant frequencies. The predominant brain wave frequencies indicate the kind of activity taking place in the brain. There are four basic groups of brain wave frequencies which are associated with most mental activity. The first, beta waves, (13-35 Hertz or pulses per second) are associated with normal activity when a person's attention is directed outward, toward normal activities. The high end of this range is associated with stress or agitated states which can impair thinking and reasoning skills. The second group, alpha waves (8-12 Hertz), can indicate relaxation. Alpha frequencies are ideal for learning and focused mental functioning. The third, theta waves (4-7 Hertz), indicate mental imagery, access to memories and internal mental focus. This state is often associated with young children, behavioral modification and sleep/dream states. The last, ultra slow, delta waves (0.5-3 Hertz) are found when a person is in deep sleep. The general rule is that the brain's predominant wave frequency will be lowest, in terms of pulses per second, when relaxed, and highest when people are most alert or agitated.225

External stimulation of the brain by electromagnetic means can cause the brain to be entrained or locked into phase with an external signal generator. Predominant brain waves can be driven or pushed into new frequency patterns by external stimulation. In other words, the external signal driver or impulse generator entrains the brain, overriding the normal frequencies causing changes in the brain waves; which then cause changes in brain chemistry; which then cause changes in brain outputs in the form of thoughts, emotions or physical condition. As you are driven, so you arrive - brain manipulation can be either beneficial or detrimental to the individual being impacted.

In combination with specific wave forms the various frequencies trigger precise chemical responses in the brain. The release of these neurochemicals cause specific reactions in the brain which result in feelings of fear, lust, depression, love, etc. All of these, and the full range of emotional/intellectual responses, are caused by very specific combinations of these brain chemicals which are released by frequency-specific electrical impulses. "Precise mixtures of these brain juices can produce extraordinarily specific mental states, such as fear of the dark, or intense concentration."226 The work in this area is advancing at a very rapid rate with new

225 Mega Brain. New Tools and Techniques (or Brain Growth and. Mind Expansion, by Michael Hutchison, 1986,

226 Mega Brain, New Tools and Techniques for Brain growth and Mind, Expansion, by Michael Hutchison, 1986, pg 114.

discoveries being made regularly. Unlocking the knowledge of these specific frequencies will yield significant breakthroughs in understanding human health. Radio frequency radiation, acting as a carrier for extremely low frequencies (ELF), can be used to wirelessly entrain brain waves. This is what HAARP could do in certain of its applications; however, the side effects of this on humans are not explored in the HAARP records but do appear in other government documents referred to in this book.

Mr. Light, a researcher and owner of Biomedical Instruments, Inc., an organization which markets electromedical devices used to control or manipulate brain activity, was quoted extensively in Hutchison's book.227 The power level needed to achieve a measure of control over brain activity is very small - from 5 to 200 microamperes - which is thousands of times less than the power needed to run a 60 watt light bulb. We are talking about very, very low power requirements. The trick for influencing brain activity is in the combination of frequency, power level and wave form. What has taken place oveT the last two decades, and most particularly in the last several years, represents huge moves forward.

Research internationally found that the brain can be easily entrained or can be influenced to change states by external electromagnetic fields. These discoveries have provided new tools for both scientists and lay people. The new tools include electrical cranial stimulation devices, sound systems, light pulse systems and a large variety of other brain entrainment and feedback devices. Technological advances also have been applied to special monitoring and control devices which allow people to learn how to control and manipulate their own brain activity for beneficial results. Reports include relaxation, pain control, speed learning and memory improvements, among others.228, 229, 230

The most recent work of Hutchison has yielded the finest descriptions of mind technologies yet put together. His latest book, Mega Brain Power, updates readers in an area which is changing so rapidly that the science is being formed faster than the applications can be fully recognized. As a result, he has for some years published the latest research in a newsletter. Recent issues231 discussed technologies for healing nervous system disorders, correcting attention deficit and hyperactive disorders in children and curing drug and alcohol dependencies among other things. Electromedicine of this type is emerging as one of the most exciting areas of medical research.

The research in recent years has extended to medical and psychological applications with startling positive results. Some of these results have been recognized by the United States Air Force, as you will see in the following chapter. Unfortunately, military research continues to look at these technologies as weapon systems rather than as human potential enhancing tools.

227 Mega Brain Power, by Michael Hutchison, 1994.
228 Super-Learning, by Sheila Ostrander and Lynn Schroeder, 1982.
229 Mega Brain Power, by Michael Hutchison, 1994.
230 Meaa Brain. New Tools and Techniques tor Brain Growth and Mind Expansion, by Michael Hutchison, 1986.
231 Megabrain Report, The Journal of Optimal Performance, Volume 2, Number 4, 1994.

One of America's most gifted inventors, Dr. Patrick Flanagan, predicted in 1962 that medicine would change. He said, "I believe some day the entire concept of medical practice will be changed by electronics. People will be treated electronically rather than with medicine."232 At that time, Dr. Flanagan had just been recognized for inventing what was the most advanced brain entrainment device, and possibly human-to-computer interface, on the planet - the Neurophone.

As Flanagan noted in a recent interview the HAARP project could be not only the biggest "ionospheric heater" in the world, but also the biggest brain-entrainment device ever conceived. According to HAARP records, when the device is built to full power it can send VLF and ELF waves using many wave forms at energy levels sufficient to affect entire regional populations.

The HAARP planners have never discussed any of this research, although the Air Force and Navy have been working in these areas since the early 1960's. Using the concept of "compartmentalization" and "need-to-know", discussed earlier in this book, it is highly likely that most of those, if not all of those, involved in building and operating the HAARP project at this early stage are unaware of these possible applications.

Dr. Robert O. Becker experimented in the early 1960's with ELF (Extremely Low Frequencies) by putting the signal on top of a DC current to carry the ELF signal. In other words, ELF rode like the passenger on a bus, maintaining its own integrity but being carried, to its specific destination. Dr. Becker tested this concept by using an ELF, 1-10 Hertz (cycles or pulses per second) signal on humans resulting in an increased loss of consciousness among test subjects. The weak ELF alone had no effect, and the DC current had a significantly reduced effect without the combination. Above 10 Hertz with DC current, the effect increasingly declined until it was no better than with DC current alone.233 What this demonstrated was that ELF, those frequencies which most effect human brain functions, could be manipulated externally with profound results.

Flanagan's Brain Tool

In 1958 when Dr. Patrick Flanagan was 14 years old, he invented the Neurophone, which won him world recognition as one of the brightest inventors of our time. The Neurophone device can convert sound (like words and music) into electrical impulses which can be transferred through any point on the body directly into the brain, bypassing the ear and associated hearing mechanisms entirely. For more than six years the United States Patent Office refused to issue a patent for the device while they debated the fine points of the technology. In the end, the government declared that the Neurophone would never work, and refused the patent. Patrick and his lawyer then went to Washington D.C. with a working model of the device to show the patent examiner. The examiner told the duo that if the device could make one of their employees who was deaf hear, he would reopen the case and issue the patent. The device was tested, the employee "heard" and the patent was granted.

232 "Whiz Kid, Hands Down", Life Magazine, September 14, 1962.

233 Cross Currents. The Perils of Electropollution, The Promise of Electromedicine, by Robert o. Becker, M.D.,pg 227.

Dr. Flanagan later went to work for Tufts University and began his next stage of research on the Neurophone, As a research scientist for Tufts, he began to work on a man to dolphin speech system for the Navy. This research led to the development of a 3-D holographic sound system which could place sounds in any location in space as perceived by a listener.

Additional research led to a vastly improved digital Neurophone, for which a patent application was filed. Immediately, the United States Defense Intelligence Agency placed it under a secrecy order as a matter of national security. Dr. Flanagan was forbidden from conducting further research or even talking about his technology for four years.

This technology has now been replaced with superior technology developed in Europe in 2001. The technology far surpasses the performance of the Flanagan invention in all applications by integrating modern circuit designs with 21st century engineering. The new technology delivers significantly gTeateT eneTgy efficiency through a more biologically compatible signal. This technology will be made available in late 2001 or early 2002 for accelerated learning applications, body system balancing and trials in hearing enhancement applications.

In the years since, Dr. Flanagan periodically toyed with new concept and design advances for Neurophonic technology. This device could be used as the ultimate computer to brain interface tool, and is being considered for reintroduction into the market place. The idea that large amounts of properly formatted information can be transferred into long term memory would revolutionize education, making the current model obsolete. Education would shift to greater emphasis on learning strategies and resources, rather than data accumulation. These changes would establish greater possibilities for creative advancement and self-actualization by mastery of intellectual potentials.

The Neurophone was one of the most powerful brain entrainment devices developed until new advances were made in the science in Europe in 2001. In recent years, these other researchers have advanced the technology and continued to work on the possibilities it offers, with an emphasis on other modes of transmission. Given the Defense Intelligence Agency's interest in the earlier device, it is very likely that they have also continued to woTk to improve it. Discussions with several inventors over the last few years about the HAARP project revealed that this radio transmitter, the ionospheric heater, could possibly be used as a wireless brain entrainment device. This use has the greatest invasive possibilities.234

Brain Biofeedback

Real time brain biofeedback is another area of brain research which is beginning to provide great opportunities to many individuals. This area has yielded new approaches foT gaining control of the mind. Through interactive computer technologies, it is now possible to monitor brain waves on a real-time basis, so that

234 Discussions with Dr. Patrick and Dr. Gael Crystal Flanagan with Dr. Nick Begich through 1994-95

the individual using these tools can see what brain waves graphically look like on a computer screen, while the person is thinking.

There are several systems now on the market, with one of the finest being produced in the United States by American Biotech Corporation. Using these systems, a person can learn to manipulate his or her own brain waves in profound ways. Some of the things which have been achieved include reaching high meditative states (states of consciousness not otherwise reached without years of practice), increasing the recovery rates of brain dysfunctions resulting from strokes or accidents, and improvements in children suffering from attention deficit and other disorders.

These new brain technologies are being used to help people with various problems. A number of researchers have shown the effectiveness of brain biofeedback in breaking drug and alcohol dependencies. The tools and techniques have been used for curing a number of mental disorders by teaching a person how to create brain patterns within themselves, at will, to change their state of consciousness. Researchers found that within 30 to 60 days most people can learn how to create a number of specific mental states at will, and without the continued use of these machines. The machines serve as a bridge to new levels of mental control. The techniques using the computer interfaces can be explained simply as a system for teaching how to control one's own thinking in one's own way to gain specific results. It can be viewed as a small child learning to control his or her legs crawling, then walking and then running. We, as adults, are still at the crawling stage when it comes to mental control. These technologies are bringing to us opportunities to take greater control of ourselves through better control of our minds. The value of this technology can not be understated.

Changing the way we think, if we are individually in control of our changes, is a healthy thing. It is disturbing to realize that governments are interested in these technologies, not for beneficial individual uses but in order to gain increased control over populations they view as dangerous. These technologies offer both great promise and a high potential for abuse. Since the technologies are here now, all of the work in these areas should be open to public review. This would help assure the preservation of the most fundamental right of humankind, the right to think in our own way.

The work being done in these fields has profound implications for all of us. The knowledge held by government agencies, under the guise of national security, would speed the understanding of these technologies and their implications. If the government's research were made public, we would have a significant advance into one of the most import-ant areas of human development. The increased efficient use of the human brain would make it more likely that we could solve the very complex problems existing in the world, in addition to improving the quality of life for many people.

This chapter introduces readers to some of the concepts which we explored, and direct readers, who become "compilers" in their own research pursuits, to new sources. This chapter also amplifies knowledge of energy in various wave forms and frequencies which can increase rather than destroy human potential. The use and development of these applications does not need to be imposed on people through the military's manipulation of the ionosphere or by other external means. These technological innovations should be chosen by individuals based upon their own decisions. In the next chapter we begin to explore the military's level of knowledge and uses of these technologies, based on the work of the Air Force, major universities and private industry.

Chapter Twenty-three

PSYCHOCIVILIZED SOCIETY AND THE C.I.A.

This chapter explores a complex subject - the use of electromagnetic waves for mind manipulation. The material is translated into simpler concepts and can be understood without a great deal of technical background. One of the main goals of the authors has been to make these concepts understandable to the layperson.

The idea of HAARP as a system for mind manipulation, some will say, is a big leap from the ionosphere. For low level military planners, it may well be. However, after a careful review of the possibilities described in the HAARP contract documents and planning records, coupled with the array of Air Force materials gathered by the authors, the possibilities are evident. The HAARP transmitting system could be used inadvertently or intentionally to alter mental functions. These next chapters will inform the reader and raise serious questions regarding what might be hidden behind the HAARP project.

"I foresee the time when we shall have the means and therefore, inevitably, the temptation to manipulate the behavior and intellectual functioning of all people through environmental and biochemical manipulation of the brain."235 The 1968 New York Times article quoted Dr. David Krech of UC Berkeley, who predicted a new technology which in the intervening years has become a reality. The work in this area has moved far beyond what anyone would think was possible a few years ago. These developments raise profound questions which should be dealt with squarely and openly, considering their far-reaching implications. Moreover, the use of the ionosphere as an antenna by the United States or any other country to manipulate in a military self-serving manner, is probably in violation of international treaties and should be forbidden by international organizations.

Dr. Jose M. R. Delgado, M.D., has researched the human brain and published his results in professional papers since 1952. He was educated in Spain and came to the United States to work at Yale University in 1950. He became a Professor of Physiology at Yale, where he continued his research work focusing on the control of the mind. His early work pioneered our understanding of the human brain and was summarized through 1969 in a book he wrote, called Physical Control of the Mind. Toward a Psychocivilized Society.236 This early work was mainly animal research, and included insertion of electrodes into the brains of animals. He found that by inducing an electrical current in the brain of his subject, he could manipulate behavior. Delgado discovered that he could create a number of effects from sleep to highly agitated states of consciousness. His later work was done wirelessly, with his most advanced efforts developed without electrode implants used at all. Stated differently, he achieved the brain manipulating effects at a distance, without any physical contact or devices attached to the living creature being manipulated. Dr.

235 The New York Times, Scientist Says Control of Intelligence Is Possible, by Harold M. Schmeck Jr., Wednesday, April 3,1968, quoting Dr. David Krech, UC Berkeley.
236 Physical Control of the Mind: Toward a Psychocivilized Society, by Jose M.R. Delgado, M.D., 1969.

Delgado found that by changing the frequency and waveform on an experimental subject, he could completely change their thinking and emotional state.

Dr. Delgado's work set the foundation for many other researchers, while at the same time opening the possibilities of misuse by the government. On page 229 of Dr. Delgado's book, he uses a quote from the UNESCO's Constitution which, in the context of his work and this book, is foreboding: "Since war begins in the mind of men, it is in the minds of men that the defenses of peace must be constructed."237 It
is a thought, in the context of Delgado's work, which smacks of the Orwellian story, 1984.

In a book about the Central Intelligence Agency's (CIA) pursuit of mind control technology, Dr. Delgado's work is also diseussed.238 Dr. Delgado's research was reviewed in 1969 by Dr. Gottlieb, who worked for the CIA's Office of Research and Development (OR) while looking for the possible uses of this technology. At that time, the work was still crude, although the CIA shared Dr. Delgado's vision for techniques which would allow for a "psychocivilized society".

During this period, a neurosurgeon at Tulane University, Dr. Robert G. Heath, brought this prospect closer to reality with his work in electrical stimulation of the brain. As one author recently put it, "Like Dr. Delgado, the neurosurgeon concluded that ESB (Electrical Stimulation of the Brain) could evoke hallucinations as well as fear and pleasure. It could literally manipulate the human will at will."239

The CIA's interest in mind control began with the Korean War, during which the North Koreans demonstrated skills in the area of mind control not previously seen in the West. The CIA undertook a significant research effort into this area which extended to numerous related fiascos. Some of these were uncovered in subsequent scandalous revelations which included Canadian citizens being mentally manipulated without consent, treatment of thousands of university students and military personnel with LSD, etc.240

To the CIA, Dr. Delgado's "wireless" effects were thought-provoking. He discovered that animals could be placed within an electromagnetic field (EMF) and be manipulated without any physical contact. Moreover, "the fields Delgado uses are as low as one fiftieth the strength of the Earth's own magnetic fields...yet when the signal is tuned to precise frequencies, Delgado can do much more than make a monkey sleepy."241 These technologies are increasingly being recognized by other researchers, and the data base has reached a level of certainty not understood as little as ten years ago.

237 United Nations Educational, Scientific and Cultural Organization's Constitution.
238 Journey into Madness. The True Story or Secret CIA Mind Control and Medical Abuse, by Gordon Thomas. 1989, pges 276-279.
239 Ibid., pg 276.
240 Report to the President bv the Commission on CIA Activities Within The United States. June 1975, pages 225-231.
241 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.

Today, a number of tools for brain entrainment are even being marketed. Very sophisticated brain biofeedback devices have also been developed which are being used to teach individuals to alter their own brain activity to more desirable states. These devices are being used to help people with various mental dysfunctions, and others reach higher peak performance mental states. These devices can be likened to mental gym equipment designed to create individually controlled exercise programs for the brain, with the outcome being increased mental functioning.

It should be kept in mind that John Heckscher, HAARP program manager, made clear in an interview that the frequencies and energies used in HAARP were controllable and in some applications would be pulsed in the 1-20 Hertz range. The ranges of frequency and energy levels, he also stated, were small, but distinguishable from the Earth's own pulsations.242 This point was further amplified by Heckscher when he said, "The ELF/ULF waves to be generated by HAARP through interaction with the polar electrojet will have power levels so small compared with me existing background that special integrating receivers wilt have to be used to detect them."243

The issue is one of controlled coherent signals, which as we stated above can be one fiftieth the energy level of the Earth's natural fields and still have profound effects on brain activity. The HAARP system creates a huge coherent controllable electromagnetic field which could be compared to a Delgado EMF, except HAARP's doesn't fill a room, it potentially fills a region the size of a large western state and, possibly, a hemisphere. Basically, the HAARP transmitter in this application will emit energy of the same level as the Earth's which is 50 times more than was needed in the wireless experiments of Dr. Delgado. What this means is that if HAARP is tuned to the right frequency, using just the right wave forms, mental disruption throughout a region could occur intentionally or as a side effect of the radio frequency transmissions.

Another important factor not thoroughly reviewed in the HAARP documents is cyclotron resonance. The HAARP signal uses this concept in its radiated energy. The effect of cyclotron resonance is a large increase in reactions in the ionosphere and in living organisms on the ground, under certain conditions. Many activities in living cells involve charged particles, and cyclotron resonance allows for the transfer of energy to cause ions to move more rapidly. It is cyclotron resonance which allows very low strength electromagnetic fields, together with earth's magnetic field, to produce significant biological effects. It occurs because the total effect has an impact on very specific particles when tuned to the right frequency. When combined with the Earth's normal magnetic fields, it is important to note, only ELF frequencies (1-100 Hertz, pulses per second) appear to cause these biological effects,

Cyclotron resonance can be visualized as a particle being spun like a coiled spring and then screwed right through the cell wall into the cell. This effect is one of the major considerations in electromedicine. To some degree this explains why non-

242 Interview of John Heckscher, HAARP Program Manager, with Jeane Manning, 2-21-1995.
243 Letter to Mr. Arther Grey, Secretary to the United States Department of Commerce, National Telecommunications and Information Administration, Interdepartment Radio Advisory Committee, Spectrum Planing Committee, Novembers, 1994.

ionizing levels of radiation produce the effects they do.244 In other words, cyclotron resonance provides a condition where a significant interaction can take place, causing chemical reactions or other physiological responses. The manipulation of energy, when applied to living systems, can be used for enhancing the potentials of people or for harming them. It is here where the reactions occur leading to good, neutral or negative health effects.

The concept of cyclotron resonance was applied to the research carried out by the U.S. Naval Medical Research Center. They were able to apply external fields in such a way as to affect the brain chemistry of rats.245 The same effects can be created in humans. The Navy research showed that they were able to affect the lithium ion, occurring naturally in the brain, so as to create the same effect as if they had treated the animal with a chemical introduction of lithium (lithium is used as a strong anti-depressant).246 Stated another way, you could say that by harmonizing or resonating with the frequency of naturally-occurring chemicals, you could amplify their potency in the body of the animal, thereby creating the same chemical changes as would have occurred with a massive dose of the chemical being administered.

One military application of this knowledge would be to introduce to adversaries on the battlefield a minute amount of a chemical compound in their water supply, air supply or by other means and then (after they consume the contaminants) transmit the right frequencies toward them to activate the otherwise benign chemicals. It would cause debilitating effects. The chemical introductions would be below generally accepted levels for toxic effects, and yet toxic effects would occur. This is a way a country could slide around international agreements regarding chemical warfare. This technique has not been lost on the military; it is clearly understood and described in Air Force documents.247, 248 These documents offer a clear example of the "electrical medicine" predicted by Dr. Patrick Flanagan in September, 1962. Unfortunately, the military's applications are being developed for the wrong purposes. The research base controlled by the United States government and others is being withheld from those engaged in human development and healing an unfortunate situation given the current state of the world and human health.

A better application of this technology would be to rebalance peoples' chemistry using a combination of low levels of chemicals with properly tuned transmitters. This technique is being applied to healing in Europe and Asia through electro-laser acupuncture techniques perfected by researchers in those areas. Dr. Reijo Makela has developed a system of treatment for use in altering body energy levels in such a way as to induce chemical changes leading to cures of disorders heretofore considered incurable. Dr. Makela's work involves treatment of cancer, diabetes and other debilitating diseases. He has lectured throughout Europe and Asia on the methods he uses and is recognized as a leader in alternative medicine. He has trained a

244 Cross Currents, The Perils of Electropollution. The Promise of Electromedicine. by Robert O. Becker, M.D., pg 238-237.
245 Ibid.
246 Ibid, pg 236-240.
247 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000, Volume I, Southwest Research Institute, San Antonio, Texas, 1982.
248 Ibid.

number of technicians in Europe and operates clinics in Spain and Finland. As a result of his success with over 12,000 patients in twelve years, more than 600 former patients joined together to form a support organization for Dr. Makela's research. The idea that a group of patients would come together for such a purpose is unheard of in the United States.

The HAARP radiated energy pulses, and the wave forms cited in the contract documents, are within the ranges most cited by research scientists as those responsible for controlling and manipulating the mind and body. This is an important factor which the military never discloses in any of its documents associated with the HAARP project, most particularly the Environmental Impact Statement.

The effects that Delgado's teams in Spain are studying include behavior modifying in animals, inhibiting bacterial growth, altering migratory movements in snails and healing bone fractures in rats. Electromagnetic fields (EMF) have also produced some effects with significant negative ramifications, including genetic mutations in fruit flies and gross deformations in chick embryos.249, 250 What this implies is that these low level effects alter the building blocks of the cells, which then alter the body components; which then alter the body. This translates into big problems for people when applied to human physiology. Scientists have known for some time that high levels of this type of radiation can heat up (ionizing radiation) the body, but they have assumed that low levels were not a problem. However, the current research, including military research, indicates that this is not the case. "For better or worse, weak electromagnetic fields are emerging as a potent biological force - a discovery with staggering implications for future medicine, science, industry and perhaps even the military... There is growing concern among experts that EMFs have been - or will be - deployed as invisible weapons to disrupt brain functioning and health."25l

The work of Delgado would not be particularly alarming if it were isolated. However, "animals exposed to radiation from radio waves show subtle changes in blood cell count, immunity, the nervous system, and behavior, according to a 1984 EPA document."252 The majority of these observed effects were from exposures which were within the government approved safety thresholds.

Here is where the Office of Naval Research, our "good neighbors" on the HAARP project, return to the scene. These are the same people that insist that the HAARP project is safe and is operating within the safety levels determined to be safe for humans by the government. However, United States safety levels are 1000 times LESS strict than the Soviets, which raises the question of why the United States standards are so low and what the Soviets observed to convince them that safety considerations required their higher standards.

249 The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
250 Cross Currents. The Perils of Electropollution. The Promise of Electromedicine, by Robert O. Becker, M.D., pg 210.
251 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
252 Ibid.

The Navy supported an international research effort to duplicate Delgado's chick embryo experiments by initiating Project Henhouse, which involved six laboratories. In 1988, the results were reported in a meeting of the Bioelectromagnetics Society with five of the six laboratories reporting "apparently, very low-level, very low frequency, pulsed magnetic fields contribute to increased abnormality incidence in early embryonic chicks."253 This study which was paid for with Naval resources showed that low levels of radiation could cause health problems.

The Navy is aware of all of the global research going on in the area of non-ionizing (non heat producing) radiations. The Office of Naval Research has been collecting published scientific reports on the biological effects of non-ionizing electromagnetic radiation, and publishing a compiled set of abstracts, since 1974. This set of abstracts, in digest form, has grown to the point where over a thousand papers are listed each year.254 These scientific papers show differing results, and can be selectively used to make any number of points which might be positive, neutral or negative. The point made here is that the HAARP folks reduced this huge body of
research to a couple of lines in the Environmental Impact Statement, which is wholly inadequate, considering the power levels to be employed with their "ionospheric heater".

The analogy can be made about the old story that a good lawyer can argue any point from either side and win by selecting the right citations. It is no different for the HAARP planners. They can selectively choose the research needed to demonstrate that there are no ill effects from their radio frequency transmitter and then, across the country on another project, select the research they want to show the opposite effect, in order to gain funding for a new weapon. In the case of HAARP, there are potential negative effects which are not being disclosed.

A neuroscientist at the Loma Linda, California, Veterans Administration Hospital, Dr. Ross Adey, has demonstrated that the brain waves of animals can be manipulated. He has shown that they can be locked in phase with external pulsating waves, which thereby affect subtle changes in behavior including enhanced learning. He has further demonstrated, in work with Dr. Suzanne Bawin, that fields too weak to trigger a nerve impulse can alter the way calcium ions bind to cell surfaces, causing an array of chemical reactions within the cell itself.255 What this means is that the kind of chemical changes which are needed to cause alterations in thinking or health can he started by very small amounts of controlled power, through understood and manipulatable means. This point is extremely important when contemplating the HAARP technologies.

Adey is also the only U.S. scientist to test a Russian machine which generates pulsed radio frequencies. Combined with other stimuli, it has been reported

253 Cross Currents. The Perils of Electropollution. The Promise ot Electromedicine. by Robert O. Becker, M.D., pg 210.
254 Ibid, pg 214.
255 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.

to induce deep sleep. When interviewed, Adey acknowledged that the device worked, but refused to comment on the United States military's use of this technology.256, 257

A lengthy article in the Wall Street Journal discussed the direction of the military in the development of what they were calling, at the time, "non-lethal" weapons. The article explored the use of anew class of weapons which could be used to disrupt communications, radars and other electronic equipment. In the article, retired Lt. General Richard Trefry, a military advisor to President Bush, said, "They're all real." he then went on to say, "But you're bordering on classified stuff here."258 The article described a series of new developments leading to these technologies which did not exist ten years before. Time schedules for the development of these technologies had been established in 1982, with the systems expected to be ready for use in the early to middle 1990's.259 One of the major contributors to the "nonlethal" effort was John Alexander, mentioned in Chapter Two, who had written an earlier article for Military Review magazine about "the new mental battlefield". The article described the emerging technologies for use in telepathic weapons and systems which would interfere with the brain's electrical functioning. This article caught the attention of the military, who began to research this area.

John Alexander was one of the prime movers in the advanced development of nonlethal systems, from his office at Los Alamos National Laboratories. He pursued his interests in obscure science and parapsychology, connecting with Janet Morris with whom he wrote a book on mind training techniques.260 In putting the book together, she recruited Ray Cline, a former deputy director of the CIA, who opened doors to the White House and Pentagon according to a Wall Street Journal article.261 The use of the technologies was apparently known by Alexander to be problematic, because some of the weapon systems would violate international agreements. Moreover, individuals began to raise concerns suggesting that the use of "nonlethals" might cause escalation, rather than control, of volatile conflicts.

The Pentagon's nonlethal study group concluded that a major effort should be made to develop these technologies, and suggested that President Bush announce a new initiative in this area similar to President Reagan's announcement of the Strategic Defense Initiative ("Star Wars"),262

Military officials objected that such a "new initiative" announcement might have the effect of spurring other governments and possible adversaries to develop their own new systems and that it might cause policy makers to begin "political

256 The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
257 Resonance, Newsletter of the Bioelectromagnetics SIG, Number 28, May 1995, Judy Wall, Editor, 684 C.R. 535, Sumtervilte, Florida, USA. (This is a special Interest Group of M.E.N.S.A.)
258 The Wall Street Journal, "Nonlethal Arms, New Class of Weapons Could Incapacitate Foe Yet Limit Casualties, by Thomas E. Ricks, January 4, 1993, page A1 and A4.
259 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000. Volumes I and II, Southwest Research Institute, San Antonio, Texas, 1982.
260 The Wall Street Journal, "Nonlethal Arms, New Class of Weapons Could Incapacitate Foe Yet Limit Casualties, by Thomas E. Ricks, January 4, 1993, page A1 and A4.
261 Ibid.
262 Ibid.

meddling" into this militarily promising area. These military objections drove the program into even more layers of secrecy, and Janet Morris and Ray Cline were cut out of the inner circle. The policy makers then decreed that the nonlethal technologies would be referred to in softer terms as "disabling systems" in the future.263

The new technology race was already on, and it appeared America's "adversaries" may have already made significant advances in the development of new weapon systems. The limits for microwaves were set in the United States 1,000 times higher than the level considered safe in the former Soviet Union. The reason that the Soviets set their safety standard as high as they did was because they detected biological effects at levels ignored by the West.264,265 The Russians abandoned the thermal model that the U.S. Military ascribed to when setting American standards in the 1950's (standards were subsequently adopted by civilian regulators).

The thermal model only acknowledges heating effects as potentially debilitating, and disregards the lower level radiations which also have significant effects when interacting with the fields of living things. The Soviets showed that electromagnetic fields, well within the U.S. "safety" standards, could disrupt heart rhythms, blood pressure and metabolism. In addition, Soviet scientist A.S. Presman said these fields can produce "visual, acoustic, and tactile sensations in man as well as emotional states in animals, (inducing everything) from suppressed states similar to narcosis to excited states reaching epilepsy."266 Presman went on to discuss the pronounced negative impact on creatures, from the embryonic stage up to the beginning of sexual maturity. The idea that genetic alteration could be caused by low-level electromagnetic fields causing deformation, death or other debilitating effects was the problem. The lack of mainstream medical understanding, beyond that found in leading edge research facilities, was the underlying barrier to recognizing the risks. What all of this means is that real damage to living things, including people, is likely being done by use of transmitters like HAARP. While on the other hand, if we gained a better understanding of these non-thermal levels of energy positive applications could be more widely used.

The Beam Team

From the 1960's through the 1970's, there were news and intelligence reports of microwave beams being directed at the U.S. Embassy in Moscow. There are some indications that beaming of the Embassy was also conducted as late as 1983. This beaming has been the subject of much speculation over the years. The government has not released the full story, and for the most part it remains

263 The Wail Street Journal, "Nonlethal Arms, New Class ot Weapons Could Incapacitate Foe Yet Limit Casualties, by Thomas E. Ricks, January 4,1993, page A1 and A4..

264 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.

265 Low-Intensity,Conflict and Modern Technology, Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabarna, June 1986.

266"The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.

classified.267, 268 Speculated effects of the radiation include health impairment and mind manipulation,269 Beginning in 1965, the government tested embassy personnel for genetic damage which may have been caused by the microwave beaming. At the same time, they launched operation Pandora, where monkeys were exposed to the same type of signals in order to measure the effects

While government representatives have maintained that there were no ill affects from the microwaves, the results of the embassy personnel testing and Pandora remain classified.270 Even though the impact of Russian microwave radiation is unclear, it turns out that there may very well have been some effect. When Dr. Gottlieb, the MKULTRA program director for the CIA, testified to the United States Congress, he said that when President Nixon went to the USSR in 1971 members of his party showed abnormal behavior including crying and depression. The spy community already knew that the Soviets had developed microwave beaming technologies which can affect mind, memory and health. Soviet research had already shown that it was also possible to create hallucinations and significant perceptual changes in people.271

The CIA's use of mind altering technologies is not new. Under MKULTRA, the CIA conducted memory experiments on thousands of unknowing people across the United States in 180 hospitals, research centers and prisons. The CIA used LSD and other drugs, brainwashing, sensory deprivation, hypnosis and many other mind control techniques until 1976 when the United States Senate investigated these practices.272, 273, 274 It appears the names of the programs and their approaches changed but the programs may have continued beyond 1976.275

Meanwhile the Soviets had moved way ahead of the United States in their development of mind war technologies. They had perfected a device called the Lida which produced an Extremely Low Frequency (ELF) pulsing field. Lida was used to put prisoners of war into trance, so that secrets could be extracted from them more readily. As mentioned earlier, this device was tested by Dr. Ross Adey in the United States at the Loma Linda VA Hospital. The Soviets went on to discover that by slight manipulation - by reversing brain polarity (by passing very low voltage current through the front of the brain to me back) - they could induce deep sleep. Mounting evidence also indicated that they may have perfected "telepathic hypnosis" which could be deployed from hundreds of miles away from the target person.276

267 Cross Currents, The Perils of Electropollution, The Promise of Electromedicine. by Robert O. Becker, M.D.
268 Super-Memory- The Revolution, by Sheila Ostrander and Lynn Schroeder,1991.
269 Ibid.
270 The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
271 Super-Memory- The Revolution, by Sheila Ostrander and Lynn Schroeder, 1991, pges. 298-299.
272 Journev into Madness. The True Story of Secret CIA Mind Control and Medical Abuse, by Gordon Thomas, 1989

273 Super-Memory' The Revolution, by Sheila Ostrander and Lynn Schroeder,1991, pges. 292-304,
274 Report to the President by the Commission on CIA Activities Within The United States. June 1975, pages 225-231,
275 Journey Into Madness. The True Story of Secret CIA Mind Control and Medical Abuse, by Gordon Thomas, 1989.
276 Super-Memory- The Revolution, by Sheila Ostrander and Lynn Schroeder,1991, pges. 292-304,

The Soviets took their technologies a huge jump forward by 1975. It was that year that they began using seven giant radio transmitters to pulse ELF waves in the 3.26 to 17.54 megaHertz range. These waves were pulsed at 6 and 11 Hertz- key brain wave rhythms - and became known to ham radio operators as the "woodpecker" signal. The story, like the HAARP story, indicated that these were used for communication with submarines, but many believe that the negative side effects were intentional.277 These "side effects" have been speculated to have caused communications interference, power failures, mood alterations over significant distances, affecting a large percentage of the population and weather modifications which have had a devastating effect on food production since the 1970's.278

A brilliant electrophysiologist, Dr. Makela studied physics and chemistry in 1953-59, followed by a two year study in psychology and additional studies in electrophysiology. He continued his education with advanced studies in Western and Chinese medicine and acupuncture, and has practiced medicine as either a research scientist or physician for over forty years.

During a 1994 visit with Dr. Makela, Dr. Nick Begich discussed the HAARP project. The idea that the HAARP system could be used as a transmitting system for brain entrainment was explored, and it reminded Dr. Makela of a number of devices with whose features he was familiar. The idea that HAARP could create various wave forms across a large segment of the electromagnetic spectrum was of concern, considering the health risks. This system had the possibility of being misused, and the risks had not been well defined. Inadvertently there could also be negative health effects if the operators were unaware of the consequences of pulsed electromagnetic radiations in the wave forms they were using - waves which were being bounced back to the earth from the ionosphere.

In particular, when reviewing the HAARP materials, Dr. Makela was reminded of a particular device which was marketed for a short time in Japan. This device was a radio transmitter which carried a pulsed wave {6-12 Hertz). The pulses were in resonance with the radio waves, so that the radio waves acted as a carrier wave to create the desired effect. The device was used to relax or focus attention. The effect was created wirelessly and at a distance.279 It should be remembered that a United States military representative has already acknowledged that they intend to use HAARP to transmit pulsed radio frequency radiation (which we assert, if modulated in just the right way and with the right wave form, could cause serious negative health effects on people and animals). HAARP specifications call for a very versatile set of parameters[280] which can do what has otherwise only been demonstrated in the laboratory or under other controlled conditions disrupt minds and create negative health effects.

277 Super-Memory- The Revolution, by Sheila Ostrander and Lynn Schroeder,1991, pges. 299- 302.
278' ibid.
279 Dr. Nick Begich visits and conversations with Dr. Reijo Makela in Finland, November 1994.
280 Office of Naval Research, Contract Number N00014-92-C-0210, ARCO Power Technologies Incorporated as Contractors, September 16, 1992 with Amendments through October 19,1993.

The United States military is very familiar with these technologies. Captain Paul Tyler was the director of the U.S. Navy's Electromagnetic Radiation Project from 1970 through 1977. He was quoted in a February 1985 Omni article about the effects of electromagnetic radiations. He concluded that effects which could be stimulated chemically could also be stimulated electrically. "With the right electromagnetic field, for example, you might be able to produce the same effects as psychoactive drugs."281 The ideas first kicked around by the CIA and early researchers were now being pursued by the military for use in controlling human behavior - a prospect of profound implications.

Another player in this seemingly-disconnected group was Arthur Guy. Under contract to the United States Air Force, he helped compile the Radiofrequency Radiation Dosimetry Handbook. The book is the only one of its kind that explores a number of areas required for the development of weapon systems. In that publication, Guy's work from the University of Washington was described. At the University of Washington he exposed rats to low levels of electromagnetic radiation. The effect of these exposures included immunological stress and increases in the formation of tumors - four times the rate of unexposed animals. This study produced negative effects at radiation levels twenty times below the established United States safety thermal level!282

The research in non-thermal effects is being conducted throughout the world. In Germany, the Deutsche Forschungsgemein-schaft - the equivalent of the American Academy of Sciences - announced their research results concerning ELF. They concluded that "nonthermal effects due to EMF exposures can be triggered in living cells under selected conditions." Reportedly, their research in these areas would continue.283

This chapter has shown that the state of the technology in the understanding of human physiology continues to advance at a very rapid rate. The result has been the discovery of effects not previously known or well understood. The controversy which still surrounds these areas is not so much one of "does it or doesn't it work", but more about widespread ignorance of the impact of energy fields which surround all life.

Scientists in various fields tend to specialize. Moreover, basic research is delayed - sometimes for decades - in being integrated into applied technologies. This occurs largely because old standards die hard and new breakthroughs in knowledge are slowly applied. New research takes many years to migrate from the high-tech defense laboratories to the practicing physician. In the interim, the military has free rein to use these new technologies for weapon systems rather than healing systems.

281 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
282 Cross Currents. The Perils of Electropollution. The Promise of Electromedicine. by Robert O. Becker, M.D., pges 194-197,
283 German Workshop on Mechanisms of EMF Interactions, Microwave News, November/December, 1991.

Chapter Twenty-four

ZAPPING THE "NONLETHAL" WAY

The area of "nonlethal" technologies has in recent years gained increased public attention. The various agencies of the federal government for over a decade gradually increased public releases regarding this technology. The "sensitizing" of people to the acceptance of these new weapons has slowly worked its way into open view. Introducing these technologies has been carefully orchestrated to avoid "change shock" and to increase the probability of public acceptance.

The possibilities offered to the defense, justice and intelligence communities in "nonlethal" systems development were enthusiastically embraced by the various agencies, Eldon Byrd of the Naval Surface Weapons Center was commissioned in 1981 and 1982, to investigate the potential for developing electromagnetic devices which could be used as 'non-lethal' weapons for riot control, hostage removal, embassy security and other clandestine operations. Byrd concluded that remote manipulation of the mind was feasible. Funding was discontinued in 1982 as far as the public knows. It is more likely that this type of research was classified and moved to other facilities and to new researchers[284] in the "black" world of hidden research projects. This type of technology would not advance beyond the concept stage without becoming a "black" project based on "national security" assertions by the military.

The Nonlethal Conference

In 1986, the United States' attorney general held a conference on the development of these new high-tech weapons. It was summarized the following year[285] in a report discussing problems and solutions for what was believed to be an area with significant future possibilities. Several areas were reported to offer new possibilities for the Department of Justice.

The Department of Justice's report disclosed that:

"Participants also discussed the use of various wave lengths and forms of administration of electromagnetic energy as a non-lethal weapon. A substantial amount of preliminary research has been conducted in this area...One conference participant noted that scientific knowledge of human physiology is progressing to the point where it may soon be possible to target specific physiologic systems with specific
frequencies of electromagnetic radiation to produce much more subtle and fine-tuned effects than those produced by photic driving."

Photic driving is the use of visible light pulsed at frequencies which have been shown to impact the brain. In some people they cause epileptic seizures. The report went on:

284 "The Mind Fields", by Kathleen McAuliffe, Omni Magazine, February 1985.
285 Report on the Attorney General's Conference on Less Than Lethal Weapons, by Sherri Sweetman, March 1987, U.S. Department of Justice, National Institute of Justice.

"There is some evidence (and a good deal of supposition) that sustained, extremely low frequency (ELF) radiation can produce nausea or disorientation, One researcher has subjected animals to ELF electromagnetic radiation through electrode implants, and feels that similar results could be produced from afar, without electrodes. One participant suggested that ideally, one might like to develop the ability to design these electromagnetic fields for specialized use, for instance to produce sleep or confusion. It is known that sleep can be induced by electrodes in the brain, and Russian scientists claim to be able to produce sleep from afar (electrosleep). "286

What these conference participants were referring to was the work conducted by Dr. Jose Delgado of Yale University and the Russian Lida machine tested by Dr. Adey, referenced earlier.

Los Alamos and Friends

The report on the Department of Justice's 1986 conference also noted, "The nature of weapons to be tested and the necessity for the tests must not be a secret of the kind whose 'leak' would result in an exaggerated expose and associated public outcry." The report went on to recognize that the military had made a number of advances in these areas but that these advances were classified. It also recommended that the military should develop the technologies for less than lethal weapons, because defense contracts were large and technically sophisticated enough to do the job.

The concern about open investigation must have been lain aside when the true extent of the military advancements were eventually realized. The idea of an open discussion of these emerging areas was abandoned to the shadowy world of secrecy and hidden agendas. The next major conference where the military unveiled its new technologies to the Justice Department was classified and not open to the press or public.287 That which was to be open had become buried in secrecy by some of the same people who limited access to knowledge in the past. The public outcry they sought to avoid is now justifiably being made by many opposed to such weapons.

In November, 1993 about 400 scientists gathered at John Hopkins University Applied Physics Lab to discuss their work in developing non-lethal weapons technologies, including radiofrequency radiation (RF), electromagnetic pulse (EMP), ELF fields, lasers and chemicals. The meeting was classified, and no detailed reports were ever publicly released.288 According to the press statements and the conference agenda (which was released) the programs developing the technologies had made significant advances, Enough advancement had been made to establish a secrecy veil and classify the conference. This conference took the whole program of nonlethal weapons a step forward by bringing the leading experts together for this event. The conference was sponsored by Los Alamos National Laboratory and focused on both military and law enforcement uses for these

286 Report on me Attorney General's Conference on Less Than Lethal Weapons, by Sherri Sweetman, March 1987, U.S. Department of Justice, National Institute of Justice.
287 The Wall Street Journal, "Nonlethal Arms, New Class of Weapons Could Incapacitate Foe Yet Limit Casualties, by Thomas E. Ricks, January 4,1993, page A1 and A4.
288 Microwave News November/December 1993, Military on Nonlethal Weapons: 'A very Attractive Option'.

technologies. Dr. Edward Teller and U.S. Attorney General Janet Reno were the scheduled keynote speakers at the conference, although Reno was unable to attend.289 (The same Dr. Teller, "father of the H-bomb", had sold the use of thermonuclear weapons to make deep water ports in Alaska in the early 1960's, promoted a Star Wars weapons system for the North Slope of Alaska in the late 1980's, and was now the cheerleader for nonlethal electromagnetics.)

Dr. Clay Easterly of Oak Ridge National Laboratories led a session on ELF/EMFs. "My major point was that there seem to be some biological sensitivities or responses to ELF fields that could be useful for nonlethal technology." He could not discuss the specific applications because the information was classified by the military. He went on to say that the military was interested in the use of non ionizing (non thermal) radiation which could be used for disabling enemy electronics, although his presentation dealt with uses which would affect people.290 This again demonstrates the level of knowledge which the military ignores in HAARP disclosures to the public - potential uses or risks associated with the generation of ELF radiations over large areas of Alaska and eventually, the planet.

A number of papers were presented at the conference, and gave the latest information on applied technologies in this area. Dr. Henry Brisker from the U.S. Army Research Laboratory presented work dealing with High Power Microwave Technology, while Dr. George Baker of the Defense Nuclear Agency, presented a paper titled "RF Weapons: A Very Attractive Nonlethal Option".

What is obvious from the number of participants and the scope of the subject matter is that the development of these ideas in new military hardware did not just arrive on the scene but rather, had been a part of the military agenda for some time. The current emphasis on these technologies reflects the level of interest of the government, and the increased visibility the government is giving these areas indicates an intention to use these systems in a more open manner.291 It is common practice to let things like these types of technological advances come out in small bits in order to "test the waters" of public opinion. In this way the population can be co-opted into accepting greater levels of intrusion by governmental agencies. The idea is to indoctrinate by being taught to believe, Tather than being given all of the facts so that a prudent person could think about the issues and make reasoned decisions. The contrast can be better stated as; "propaganda -versus- persuasion by reason".

These technologies extend beyond the Air Force, CIA and Navy. "The U.S. Army has its own product - a radiofrequeney (RF) weapon. In the August 24, 1987 issue of Defense News, John Rosado of Harry Diamond Labs in Adephi, MD, is quoted as saying that 'the nature of warfare will be completely changed by the use of (RF) weapons." Rosado also noted that RF radiation could be used over a wide battlefield

259 Microwave News November/December 1993, Military on Nonlethal Weapons: 'A very Attractive Option'.
290 Ibid.
291 Non-Lethal Defense, a classified Conference sponsored by Los Alamos National Laboratory, November 16-17,1993.

with phased arrays... ".292 A phased array antenna system is what HAARP uses to send its signals to the ionosphere.

From Adversaries to Allies

Now that the "Cold War" is over and there is increased cooperation between the superpowers and former foes, Russian and American scientists have begun cooperating in a number of research efforts including electromagnetics. The Soviet counterpart to Los Alamos National Laboratory, Arzamas-16 located east of Moscow, has begun collaborating with the U.S.A.

In the early 1990's, the two tabs worked together on research regarding "an electromagnetic super generator capable of creating a pulse of electrical power greater than any found in nature." A second test was planned for "America's only similar pulsed power program", located at Los Alamos National Laboratory.293 The nuclear detonations in the upper atmosphere which were once used to create electromagnetic pulses could now be created using the technology developed in the Eastlund patents.

Electromagnetic pulse weapons also are the subject of ongoing research into new "nonlethal" systems. These types of systems present the greatest challenges and risks to health. HAARP represents more than an experimental atmospheric physics device. It has the potential for profound and far reaching effects by delivering dangerous electromagnetic pulses (BMP).

The Russian "non-lethal" or perhaps more accurately, the lethal technologies, were discussed in a 1993 article. It discloses the Cold War development of a device called a "gyrotron", which was designed to "sweep the sky of Western warplanes" by using high energy micro-waves. The article described this weapon as being able to cleanse the atmosphere of chemicals which cause ozone depletion. In developing the weapon system, the Russians discovered that this technology could be used to help the ozone problem or otherwise alter the chemical composition of the upper atmosphere294.

The technology designed to sweep the sky of warplanes has the same use envisioned by Nikola Tesla in the 1940's when he offered his technology to the United States government. Further, Eastlund described how his patents could be used to alter the chemical composition of the ionosphere, including adding ozone or destroying other selected chemicals.

The gyrotron described in the article was developed as one of the "woodpecker" radio transmitters, and works on the same principles as the Western devices. During the Cold War, the Russians' work was much more advanced than the work being done in the United States. Scientists from Russia are now collaborating with Lawrence Livermore National Laboratory on these projects.

292 Microwave News, May/June, 1988.

293 "From Russia with Love...at Los Alamos?, Intelligence Report, Parade Special Supplement, 1993?

294 "Calif.'s Livermore Weighs Plan to Use Russian Technology", by Tom Schmitz, The Journal of Commerce, April 8, 1993.

From National Defense to the Justice Department

On July 21, 1994, Dr. Christopher Lamb, Director of Policy Planning, issued a draft Department of Defense directive which would establish a policy for non-lethal weapons. The policy was intended to take effect January 1, 1995, and formally connected the military's non-lethal research to civilian law enforcement agencies.

The government's plan to vise pulsed electromagnetic and radio frequency systems as a nonlethal technology for domestic Justice Department use rings the alarm for some observers. Nevertheless, the plan for integrating these systems is moving forward. Coupling these uses with expanded military missions is even more disturbing. This combined mission raises additional constitutional questions for Americans regarding the power of the federal government.295

In interviews with members of the Defense Department the development of this policy was corrfirmed.296 In those February 1995, discussions, it was discovered that these policies were internal to agencies and were not subject to any public review process.

In its current draft form, the policy gives highest priority to development of those technologies most likely to get dual use, i.e. law enforcement and military applications. According to this document, non-lethal weapons are to be used on the government's domestic "adversaries". The definition of "adversary" has been significantly enlarged in the policy:

"The term 'adversary' is used above in its broadest sense, including those who are not declared enemies but who are engaged in activities we wish to stop. This policy does not preclude legally authorized domestic use of the nonlethal weapons by United States military forces in support of taw enforcement."297

This allows use of the military in actions against the citizens of the country that they are supposed to protect. This policy statement begs the question; who are the enemies that are engaged in activities they wish to stop, what are those activities, and who will make the decisions to stop these activities?

An important aspect of non-lethal weapon systems is that the name non-lethal is intentionally misleading. The Policy adds, "It is important that the public understand that just as lethal weapons do not achieve perfect lethality, neither will 'non-lethal' weapons always be capable of precluding fatalities and undesired collateral damage",298 In other words, you might still destroy property and kill people with the use of these new weapons.

295 Department of Defense Directive, Policy for Non-Lethal Weapons, Office of the Assistant Secretary of Defense, Draft July 21, 1994.

296 Interviews in late February by Nick Begich.

297 Department of Defense Directive, Poiicy for Non-Lethal Weapons, Office of the Assistant Secretary of Defense, Draft July 21,1994.

298 Ibid.

Pentagon officials said they would like to get $41 million in 1995, for developing these weapons which include their electromagnetic pulse systems.299 This "meager" sum has a good deal of reach, because it is for implementing already understood technology, for building prototype weapons out of mostly "off the shelf parts. The only challenge would be putting them together. The basic research for these technologies was done with "black budget" money. (These are funds which are so secret even the Congress does not know how the money will be spent, behind which organizations like the CIA, government laboratories run by the military and other intelligence organizations, hide their programs.) The Pentagon actually received $50 million to be used jointly with the Department of Justice in developing these "non-lethal" weapons.300

In press statements, the government continues to downplay the risks associated with such systems, even though the lethal potential is described in context of their own usage policy. In Orwellian double speak, what is nonlethal can be lethal.

The development of these technologies is being jointly managed by the Non-Lethal Weapons Steering Committee, which is co-chaired by the Undersecretary of Defense for Acquisition and Technology and the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict.301 This crystallizes the new Justice Department and Department of Defense alliance for future law enforcement and military initiatives, in the United States.

The weaving together of Department of Defense missions with civilian Department of Justice missions is unprecedented. Not since the Civil War has the military machinery - except in very limited riot control actions - been turned against United States citizens. The idea of using these dangerous and intrusive systems is counter to good public policy. This raises serious questions regarding use of our Department of Defense for domestic police actions, which may be a violation of constitutional law by being in conflict with the narrowly-defined federal use of the military "for the national defense".

International Alarm Bells Begin to Sound

Questions are not just being raised by the authors of this book, they are being raised by the International Committee of the Red Cross. In their report from mid-1994,302 a number of points were raised.

The idea of "war without death" was not new but began in the I950's, according to the report. The military interest in these systems dealt with chemical weapons, later advancing to radiation weapons. The report looked at the ramifications of international law regarding use of these new technologies. It pointed

299 The wall street Journal, "Nonlethal Arms, New Class of Weapons Could Incapacitate Foe Yet Limit Casualties, by Thomas E. Ricks, January 4,1993, page A1 and A4.
300 Warren Hough, "High-Tech Civilian Control Studied; Secret Pentagon - DoJ Memo of Understanding, 'Non-lethal' weapons under development, are being added to the government arsenal in its war against its own citizens.", The Spotlight, July 31, 1995.
301 Perry Plans to Launch Nonlethal Warfare Effort, Defense News September 19-25, 1994.
302 "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International Law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.

out weaknesses in the international conventions regarding the use of chemical weapons:

"Therefore, when the Convention (Chemical Weapons Convention) comes into force next year, activities involving them - activities such as development, production, stockpiling and use - will become illegal, unless their purpose is a purpose that is expressly not prohibited under the Convention. One such purpose is 'law enforcement including domestic riot control purposes'[303] Unfortunately, the Convention does not define what it means by law enforcement' (whose law? what law? enforcement where? by whom?), though it does define what it means by 'riot control agent', namely 'any chemical...which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure'. Stales parties are enjoined 'not to use riot control agents as a method of warfare' ". 304

In other words, we can use on our own citizens what we cannot use in warfare with real enemies who are threats to national security. This explains why the development of nonlethals has moved out of the Department of Defense into the Department of Justice. For the Department of Defense to continue to work on these weapons, as instruments of war, is now illegal under international law. The Red Cross report went on to discuss the shift from weapons of war to police tools which they called - "riot control agents".

What does this mean for Americans? This places Americans, and citizens of other counties, in a lesser protected class than individuals seeking to destroy our counties - our real adversaries. This language really represents a way for countries to continue to develop these weapons. This is a loop hole in the agreement. So while the treaty looks good on the surface, it is hollow rhetoric underneath.

In another section of the report, "Future Weapons Using High Power Microwaves" are discussed at length. This section describes microwave frequencies, for HAARP developed for use in weapons against machines and people.

One of the uses described is an Electromagnetic Pulse (EMP) weapon which gives an operator the same ability to wipe out electronic circuits as a nuclear blast would provide. The main difference is that this new technology is controllable, and can be used without violating nuclear weapons treaties.

This section of the report then described energy levels needed for the following to occur:

- "Overheats and damages animal tissue."
- Possibly affects nervous system."

303 Chemical Weapons Convention, Article II 9(d).
304 "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International Law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.

* "Threshold for microwave hearing."

* "Causes bit errors in unshielded computers."

* "Burns out unprotected receiver diodes in antennas."

The effects are based on radio frequency radiation being pulsed "between 10 and 100 pulses per second". The report confirmed that non-thermal effects were being researched. These non-thermal effects included damage to human health when the effects occurred "within so-called modulation frequency windows (10 Hertz is one such window305) or power density windows306".

The way these weapons work was clearly described when the report noted their effect on machines:

"A HPM (High Power Microwave) weapon employs a high power, rapidly pulsating microwave beam that penetrates electronic components. The pulsing action internally excites the components, rapidly generating intense heat which causes them to fuse or melt, thus destroying the circuit."

Tesla described his speed of light system as being able to melt aircraft hundreds of miles away. The Red Cross report echoes Tesla:

"HPM (weapons) attack at the speed of light thus making avoidance of the beam impossible, consequently negating the advantage of weapon systems such as high velocity tactical missiles."

In other words, with this kind of weapon there is no machine which could get by this invisible wall of directed energy. HAARP sets in motion the beginning of a system which could have these effects over the entire world.

In the last section of the report, the power levels that the Red Cross expects by the end of the decade are set at 100,000,000,000 watts307 - the same 100 gigawatt level "desired" by HAARP planners.308

Another report on non-lethal technologies, issued by the Council on Foreign Relations points out that, "The Nairobi Convention, to which the United States is a signatory, prohibits the broadcast of electronic signals into a sovereign state without its consent in peacetime. "309

305 Discussion with Dr. Patrick Flanagan on August 2, 1995 (by co-author Begich).
306 "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International Law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.
307 "Expert Meeting on Certain Weapon Systems and on Implementation Mechanisms in International law", Report of the International Committee of the Red Cross, Geneva, Switzerland, May 30 - June 1, 1994. Issued July 1994.
308 PL/GP Technical Memorandum No. 195; "Presentations from the HAARP Workshop on Ionospheric Heating Diagnostics, 30 April - 2 May 1991, Phillips Laboratory (AFSC), Hanscom AFB, MA. 01731-5000"; Editor, Major Drew Fisher; October 22,1991.
309 "Non-Lethal Technologies; Military Options and implications", Report of an Independent Task Force sponsored by the Council on Foreign Relations, Malcom H. Weiner, Chairman, released June 22, 1995.

This report opens discussion of the use of these weapons against terrorists and drug traffickers.310 The CFR report recommends that this be done secretly so that the victims do not know where the attack is from, or if there even is an attack. There is a problem with this approach. The use of these weapons, even against these kinds of individuals, may be in violation of United States law in that it presumes guilt rather than innocence. In other words the police, CIA, DEA or other enforcement organization becomes the judge, jury and executioner.

The Universal Tool - HAARP

In a summary document produced at Maxwell Air Force Base, the real potentials of these weapon applications for the universal military tool, HAARP, are described. Although the HAARP literature produced by the military is silent on the topics discussed below, the Air Force showed, by this publication, that they are well aware of the potential use of a transmitting system like HAARP. More importantly politically is the "Newt Gingrich spin" placed on the development efforts in the foreword, by today's Speaker of the House, to the military's report on this subject.

The foreward to Low-intensity Conflict and Modern Technology was written by Congressman Newt Gingrich in 1986 before he rose to the position of Speaker. This position makes him currently the third most powerful person in the United States government. Gingrich's views on "low intensity conflicts" become relevant when considered along with the development of non-lethal technology. He focuses on creating approaches to conflict which can dispense with radicals who, in his words, "engage quietly in dirty little wars in faraway places with almost no regard for legal nicety or the technical problems of international law".311

The ability of the United States to meet these challenges is also discussed in the loreword as Gingrich wrote:

"The organization of power in the State and Defense Departments and the relationships between Congress, the news media, and the executive branch are all unsuited to fighting low-intensity conflict effectively."

He goes on to describe the limits of the military in addressing these types of conflicts, and commends the military foT developing the policy doctrine and the new technology directions of the Air Force put forward in the book. Newt Gingrich apparently remains a fan of non-lethal weapons, which he views as useful technology for domestic law enforcement. Specifically, he said, when commenting on these technologies, that they "are our real peace dividend" and that they will "preserve the defense industrial base, stimulate jobs in high-technology industry, and provide needed new options to local police and law enforcement authorities."312

310 Non-Lethal Technologies; Military Options and Implications", Report of an Independent Task Force sponsored by the Council on Foreign Relations, Malcom H. Weiner, Chairman, released June 22, 1995.
311 Low-Intensity Conflict and Modern Technology. Lt Col. David J. Dean USAF, Editor, Air University Press, Canter for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.
312 "Armageddon Killing Them Softly" by Russell Shorto, GQ, March 1995.

Another interesting issue to contemplate is the Defense Department's new Policy on non-lethal weapon systems, where "adversaries" and "enemies" have been more broadly deftned, as here the use of such systems against American citizens. The idea that these systems can be used almost without detection to manipulate the behavior and thinking of people raises moral questions. This use also appears to be in conflict with Constitutional rights regarding free expression and speech. The fact that the military together with the United States Justice Department can now use these technologies, under their broad definitions, should sound an alarm for all people, not just Americans.313

In our opinion, the only redeeming discussion in Low-Intensity Conflict. and Modern Technology, (a compilation of papers presented in 1984) was that some at the meeting saw the "new" technologies for what they were, and began heated debates about the morality of using these weapon systems. In the closing page of the technology overview the following was written:

"Paul Tyler also discusses the application of electromagnetic radiation (EMR) to low-intensity conflict. He surveys ongoing scientific research into the biological effects of electromagnetic radiation. Tyler tells us current evidence indicates that specific biological effects can be achieved by controlling the perimeters of electromagnetic radiation directed at human subjects. Thus there is the potential to use EMR to control human behavior or even to maim or kill adversaries. Tyler urges that the United States should devote considerable resources to exploring the possibilities of developing EMR weapons technology, which could be of particular value in low-intensity scenarios. "314

It becomes increasingly obvious that the inner circle of the Department of Defense placed a substantial amount of effort and emphasis in these areas.

The writer continued:

"Both Tyler's and Ruotanen's (another contributor to Low-Intensity Conflict and Modern Technology) papers created heated discussions. Some panel members questioned the advisability of employing nuclear, EMP (electromagnetic pulse), and EMR (electromagnetic radiation) weapons.They felt the ever-present danger of escalation would negate any advantage to be gained from surgical ground or atmospheric nuclear burst. Some on the panel saw Tyler's article as bordering on moral heresy. It is acceptable to have weapons and strategies to blow bodies into little pieces or burn them to a crisp, but not to use medical research and techniques to develop more subtle ways of eliminating or controlling enemies. There was some feeling that any benefit to be gained from research into EMR effects - dangerous in itself - might well be overshadowed by indignant outcries against the use of EMR weapons on human beings. "315

313 Department of Defense Directive, Policy for Non-Lethal Weapons, Office of the Assistant Secretary of Defense, Draft July 21,1994.
314 Low-Intensity Conflict and Modern Technology,. Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.
315 Ibid.

The development of these new weapons helps demonstrate the general immorality of war, particularly when the military establishment presents mind manipulation as a preferable outcome to death. The authors of Angels Don't Play This HAARP believe that we need open debate on these types of weapons. These discussions should be similar to nuclear arms talks.

Another revealing section of this military compiled book apparently aimed at a rationale which would make sense in the minds of defense planners and would help them deal with the moral issues:

"The articles and discussions in the technology panels generated quite a bit of heat and quite a bit of light. Chief among the concepts brought into the light was that the application of technology to low-intensity conflict should not hinge on the debate over simple or advanced systems, or high versus low technologies...The key is to recognize specific requirements and apply suitable systems and technologies to meet those requirements. "316

Stated differently, the military's means justifies the military's end. (For Ruotanen's comments on electromagnetic pulses see our chapter, "Thermonuclear Weapons Replaced By Electropulse.")

Obviously, these concepts were well understood by the military in 1984 when the original work was presented which led to this book's publication in 1986. The system's development moved forward- most likely within "black budgets" - from 1984 onward. The HAARP system is the largest concept-delivery system ever constructed by the military which could create the effects described in 1984.

The next chapter in Low-Intensity Conflict and Modern Technology is the section written by Captain Paul Tyler. Tyler discusses, to some degree, the application of non-ionizing radiation using external fields including radiofrequency radiation and other electromagnetic radiations. He discusses some of the beneficial effects of this energy for healing wounds, bone regeneration in fractures, electroanesthesia, acupuncture and pain relief.

He then jumps into the military applications of this technology:

"The potential applications of artificial electromagnetic fields are wide-ranging and can be used in many military or quasi-military situations... Some of these potential uses include dealing with terrorist groups, crowd control, controlling breaches of security at military installations, and antipersonnel techniques in tactical warfare. In all of these cases the EM systems would be used to produce mild to severe physiological disruption or perceptual distortion or disorientation. In addition, the ability of individuals to function could be degraded to such a point that they would be combat ineffective. Another advantage of electromagnetic systems is that they can provide coverage over large areas with a single system. They are silent and

316 Low-lntensity Conflict and Modern Technology. Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.

countermeasures to them may be difficult to develop... One last area where electromagnetic radiation may prove of some value is in enhancing abilities of individuals for anomalous phenomena. "317

Tyler's comments point to applications which may already be somewhat developed. He refers to an earlier Air Force document about the uses of radio frequency radiation in combat situations, (note that HAARP is the most versatile and the largest radio frequency radiation transmitter in the world.) He also points out that the uses may include enhancement of "anomalous phenomena" in individuals. Anomalous phenomena are those kinds of things which are not readily explained. You might say these are the quirks in human potentials. These could be called extrasensory or super-normal phenomena. This significant area is carefully screened in the writing. He refers to Eastern European research and the Soviet work also, without disclosing what exactly they were doing with this technology.

Another document prepared for the Air Force in 1982 reveals the direction that branch of the armed services took the technology. While commenting on radio frequency radiation usages the report stated:

"Biotechnology research must consider the significant advances that can be made in electromagnetic radiation weapons and defenses that could be in place by the year 2000.. .Research is first needed to develop and apply methods for assessing pulsed RFR (radio frequency radiation) effects. Techniques are needed for depositing RFR at selected organ sites. Mathematical models and physical measurement capabilities must be developed to track, real time, RFR energy distributions within these organ sites as a function of physiological processes such as diffusion and blood flow. These studies will require prudent extrapolation of physical and physiological data obtained from laboratory animals to humans in operational environments. "318

This 1982 report called for research to develop hardware that could deliver the radiation through new weapons for the Air Force.

A research publication commissioned by the Air Force - Radio Frequency Dosimetry Handbook - described these models, in time to meet the schedules they had put forward in 1982.319 The book gives mathematics for calculating the dosages (Dosimetry) of radio frequency radiation necessary to cause changes in animals and humans. The book compiled research spanning five decades, and contains a bibliography which is 29 pages long. It is the only book of its kind available on the subject in the world. This book, and more importantly the research behind it, forms the matrix of thought and theory for the finest electromedical devices for healing yet contemplated. However, this military research is not being used to heal; it is being used to develop better methods of killing.

317 Low-lntensitv Conflict and Modern Technology, Lt Col. David J. Dean USAF, Editor, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986, pages 249-251.
318 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000. Volume I, Southwest Research Institute, San Antonio, Texas, 1982, pg. 44.
319 Radiofrequency Radiation Dosimetry Handbook , United States Air Force School of Aerospace Medicine, Brooks Air Force Base, Texas, October 1986.

One of the principal reviewers of the Radiofrequency Radiation Dosimetry Handbook for the Air Force was Dr. Herman P. Schwan. Dr. Schwan was also the largest contributor to the book, having two full pages of his work alone cited in the bibliography. His basic research is being used for the development of military hardware for use by the West. His recruitment for this is another case of the "military means justifying the military ends". An interesting aside to this individual's history Includes his work in Nazi Germany during World War II, where he worked in scientific laboratories. He was later admitted to the United States under a special military operation called "Project Paperclip"320, a pro-gram designed to bring to the United States prominent scientists who had been employed in Nazi laboratories during the war.321 In 1957, Dr. Schwan was working for the Biological Warfare Laboratories at Fort Detrick, Maryland, where the United States military gave him a "Top Secret" security clearance.322 Dr. Schwan is now working at University of Pennsylvania.

Going back for a moment to the 1982 Air Force report referred to earlier, the use of radiofrequency radiation in the new weapon systems contemplated by the Air Force was intended to change the central nervous system, cardiovascular system and the respiratory system. We were distressed to read about the idea of using this technology to alter the way people think in order to make the "enemy" of the government incapable of waging war.323 This type of use of a technological advancement is inherently evil, in the opinion of the authors of this book. Thinking is a fundamental right of all people. No individual or government should interfere with the free will of individuals in this way. Moreover, the fact that these technologies are classified - and hidden from the medical community - denies humanity the opportunity to explore these areas for healing people rather than for destructive purposes.

The report speaks about using this technology in a way which could interact with biological or chemical agents, The report states, "it may be possible to sensitize large military groups to extremely dispersed amounts of biological and chemical agents. It should be noted that this may require relatively low level RFR."324 The idea expressed here is that depositing small amounts of chemicals in a person's physiological system, in amounts below normal levels where negative physical effects are known to occur, will ensure they have no perceivable effect until radio frequency radiation (RFR) is introduced. Once introduced, the RFR creates physiological reactions which are detrimental to the host. This would allow individuais who are not exposed to the chemicals to then enter the area of the RFR without harm to their own bodies. When an operator tunes the RFR in just the right

320 Proiect Paperclip, by Dr. Clarence Rasby, Athenaeum Press, 1975,
321 Memorandum, Office of the Deputy Director of Intelligence, Headquarters European Command,
October 30, 1947. (provided by: International Committee for The Convention Against Offensive Microwave Weapons)
322 Memorandum, Headquarters Second United States Army, Fort Meade, Maryland, September 5, 1957. (provided by: International Committee for The Convention Against Offensive Microwave Weapons)
323 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000, Volumes I and II, Southwest Research Institute, San Antonio, Texas, 1982.
324 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000, Volumes 1 and II, Southwest Research Institute, San Antonio, Texas, 1982.

way, changes are caused in the energy state of atoms, which cause chemical reactions in the body, which in turn manifest as physiological or psychological changes.

The introduction of small amounts of chemicals is a very important concept when cyclotron resonance is considered. The HAARP transmitter uses cyclotron resonance in radiating its energy transmissions into the ionosphere. This causes a large increase in reactions in the ionosphere and in living organisms. Cyclotron resonance occurs when, as a result of complex electromagnetic interactions, a charged particle or ion begins to go into a circular, or orbital, motion. The speed of the orbits
is determined by the ratio between the charge and weight of the particle and the strength of the applied field. Once this happens, and a specific charged particle frequency determined, if an electric field is added that is in harmony with this frequency at right angles to the magnetic field, energy is transferred from the electric field to the charged particle.

Many activities in living cells involve charged particles. Cyclotron resonance allows for the transfer of energy to cause ions to move more rapidly. it_is cyclotron resonance which allows very low strength electromagnetic fields, together with Earth's magnetic field, to produce major biological effects. It happens because the total effect impacts very specific particles when tuned to the right frequency. To some degree, this explains why non-ionizing levels of radiation produce the effects which they do.325 The right weapon system could literally be tuned like a radio by an operator for the maximum negative effect. The principle could also be applied for healing purposes, and this area is being researched in some quarters.

Cyclotron resonance can be visualized as a particle being spun like a coiled spring and then screwed right through the cell wall into the cell. Here, reactions can lead to good, neutral or negative health effects. This effect is one of the major factors in electromedicine.

When combined with the Earth's normal magnetic fields, it is important to note, only ELF (1-100 Hertz) frequencies can cause controlled or accidental negative health effects. As far as is generally known, this is true until the strength of radiation escalates to the ionizing level.

The concept of cyclotron resonance was applied to the research carried out by the U.S. Naval Medical Research Center. They were able to apply external fields in a way which affected the brain chemistry of animals. They were able to affect the lithium ion to create the same effect as if they had treated the animal with the chemical lithium (lithium is used as a strong anti-depressant).326 In other words, affecting a chemical which was already in the body, or one that is introduced to the body, a person could literally amplify the effect of the chemical to the point where a very significant effect is caused, even death. Many naturally occurring chemicals are not dangerous in the amounts present in the body. If these chemicals are affected by

325 Cross Currents. The Perils of Electropoliution. The Promise of Electromedicine. by Robert O. Becker, M.D., pg 236-237.
326 Cross Currents. The Perils of Electropoliution. The Promise of Electromedicine. by Robert O. Becker, M.D., pg 236-240.

RFR, however, their potency increases to the point of being dangerous. The introduction of RFR causes a change in energy states, which cause chemical reactions. The results depend on wave form, frequency and energy level introduced, among other things. HAARP could be used to deliver the type of radiofrequency radiation described by Tyler and others. The use of HAARP in this way could be intentional or accidental, depending on the level of knowledge held by the equipment operators.

The 1982 report, Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000. went on to describe graphically the research efforts, breaking them into three primary areas.

* "Pulsed RFR Effects" which covered a research period from 1980 through 1995, emphasized "considerably increased efforts" in this area.

* "Mechanisms of RFR with Living Systems" was referred to as a "continuation of ongoing research" beginning in 1980 and forecast to conclude around 1997.

* The last area of emphasis was "RFR Forced Disruptive Phenomena", which they considered a "major new initiative". It was to begin around 1986 and continue until 2010. This last area could be characterized as applied technology, scheduled to begin at the same time as the Radiofrequency Radiation Dosimetry Handbook's completion. The handbook gave the basic information needed to develop new and powerful weapon systems which would have a negative effect on humans and electronics, but would leave otheT property unscathed.327 By the mid-1990's, the timeline for development was on or ahead of schedule.

The above report grew into a second volume, which gave a more detailed account of the Air Force's 1982 level of knowledge of radio frequency radiation (RFR) impacts on people. This report says, "As the technological race continues, knowledge of mechanisms of action of RFR with living systems and the assessment of pulsed RFR effects will demonstrate the vulnerability of humans to complex pulsed electromagnetic radiation fields in combination with other stresses."328

The Air Force document laid out the aims and approaches for developing technological expertise to make adversaries helpless. The use of the technologies crystallized in the Radiofrequency Radiation Dosimetry Handbook, previously cited. The researchers' intent was to monitor the effects of the radiofrequency radiations at a chemical, molecular and atomic level. The document stated,

"Currently available data allow the projection that specially generated radiofrequency radiation (RFR) fields may pose powerful and revolutionary antipersonnel military threats. Electroshock therapy indicates the ability of induced electric current to completely interrupt mental functioning for short periods of time, to obtain cognition for longer periods and to restructure emotional responses over

327 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000. Volumes I and II, Southwest Research Institute, San Antonio, Texas.
328 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000. Volumes I and II, Southwest Research Institute, San Antonio, Texas, pg. 181-188.

prolonged intervals. Experience with electroshock therapy, RFR experiments and the increasing understanding of the brain as an electrically mediated organ suggest the serious probability that impressed electromagnetic fields can be disruptive of purposeful behavior and may be capable of directing and/or interrogating such behavior. Further, the passage of approximately 100 milliamperes through the myocardium can lead to cardiac standstill and death, again pointing to a speed-of-light weapons effect. "329

The advances in wireless transmission of energy for these kinds of weapons has reached the stage where we could see them used in the coming decade. It is likely that the research will give technicians increasingly more versatile and controlled effects.

The document then built into a wild scheme which, upon first reading, escaped our research focus. We couldn't quite get the idea of what the Air Force meant by "interrogating", and how this would fit into the picture of radiofrequency radiation weapons hardware.

It became clear when we read the following:

"While initial attention should be toward degradation of human performance through thermal loading and electromagnetic field effects, subsequent work should address the possibilities of directing and interrogating mental functioning, using externally applied fields within the possibility of a revolutionary capability to defend against hostile actions, and to collect intelligence data prior to conflict onset. "330

What this seemed to say was that the objective of the research would be toward mind manipulation at a distance, where the military could alter what people thought and, at the same time, know what they thought. It seemed too much like a science fiction novel. How in the world could this effect be possible? How long had research been underway, so that the military would be so bold as to publish this kind of material in an unclassified document? Could it be that they had quietly advanced their research into these technologies under a veil of secrecy? Then again, the Neurophone technology had been around since the 1960's. It had been thoroughly investigated and most likely used in forming the basis for new weapons. After all, the military had confiscated and controlled the technology under a secrecy order decades before (see Chapter Twenty-two)

The report went on to describe a system which again pointed to the HAARP project. The report called for the development of:

"A rapidly scanning RFR system [which] could provide an effective stun or kill capability over a large area. System effectiveness will be a function of waveform,

329 Final Report On Biotechnology Research Requirements For Aeronautical Systems Through the Year 2000, Volumes I and II, Southwest Research Institute, San Antonio, Texas, pg. 181-188.
330 Ibid.

field intensity, pulse widths, repetition frequency and carrier frequency. The system can be developed using tissue and whole animal experimental studies, coupled with mechanisms and waveform effects research."

This is what HAARP is, among other things. Page V of the HAARP HF Active Auroral Research Program. Joint Program Plans and Activities specifies that the RFR heater must have a rapid scanning capability. Other HAARP documents define the waveform and frequency characteristics as if the same writer had written all of the documents.331 It is the new tool for the military in meeting their self imposed challenge of a "technological race." HAARP is the one-size-fits-all RFR universal tool.

The grossly unfortunate part of this type of experimentation is how it is used. In our opinion, using RFR and other energies to destroy human life, as opposed to enhancing it, is immoral. The new directions of the energy sciences in healing people and enhancing health are not considered by the military - a travesty and a disservice to us all. At a time when health care costs are rising, and the threats of major conflict declining, our government continues to spend billions on killing rather than on enhancing the human experience. These areas are important, and the research should be available so that more prudent uses can be developed. If this happened, we believe it would speed the positive developments being pursued by those who have great energy and creativity; but limited resources.

Unfortunately, the idea of using RFR for destructive purposes negates the entire area of positive life science applications. The research in life sciences using electromagnetic radiations (EMR) is advancing outside of the mainstream medical establishment, but is beginning to be used there as well. Some genetic engineering researchers for example, are already using this knowledge in their work.

Going back to the text by Captain Paul Tyler, we can look at the debate between classical theories and recent research. There is a gulf of conflict between these two schools of thought. The debate centers on the classical idea that only ionizing radiation (that which generates heat in tissue) can cause reactions in the body, while new research indicates that subtle, small, amounts of energy can cause reactions as well. What Tyler wrote in 1984, as an officer in the Air Force, puts the debate simply. He said,

"Even though the body is basically an electrochemical system, modem science has almost exclusively studied the chemical aspects of the body and to date has largely neglected the electrical aspects. However, over the past decade researchers have devised many mathematical models to approximate the internal fields in animals and humans. Some of the later models have shown general agreement with experimental measurements made with the phantom models and animals. Presently most scientists in the field use the concept of specific absorption rate for determining the Dosimetry (dosages) of electromagnetic radiation. Specific absorption rate is the intensity of the internal electric field or quantity of energy absorbed... However, the use of these classical concepts of electrodynamics does not explain some experimental

331 Ionospheric Research Instrument (HAARP), March 6,1992, Attachment to contract PR. No. N00014-92-C-0210 issued to ARCO Power Technologies, inc. pages 15-19.

results and clinical findings. For example, according to classical physics, the frequency of visible light would indicate that it is reflected or totally absorbed within the first few millimeters of tissue and thus no light should pass through significant amounts of tissue. But it does. Also, classical theory indicates that the body should be completely invisible to extremely low frequencies of light where a single wave length is thousands of miles long. However, visible light has been used in clinical medicine to trans illuminate various body tissues. "332

In other words, the classical theories are partially wrong in that they do not fully explain all of the reactions which are observed in the body. The Navy has abstracted over a thousand international professional papers by private and government scientists which explore these issues. The Navy is well aware of the current research which shows the non-thermal effects of various electromagnetic radiations when they interact with living tissue,

Tyler continues, "A second area where classical theory fails to provide an adequate explanation for observed effects is in the clinical use of extremely low frequency (ELF) electromagnetic fields. Researchers have found that pulsed external magnetic fields at frequencies below 100 Hertz (pulses/cycles per second) will stimulate the healing of nonunion fractures, congenital pseudarthroses, and failed arthroses. The effects of these pulsed magnetic fields have been extremely impressive, and their use in orthopedic conditions has been approved by the Food and Drug Administration. "333

Even the FDA, one of the most vigorous regulatory authorities in the country, accepts these non-thermal effects.

Tyler adds, "Recently, pulsed electromagnetic fields have been reported to induce cellular transcription (this has to do with the duplication or copying of information from DNA, a process important to life). At the other end of the non ionizing spectrum, research reports are also showing biological effects that are not predicted in classical theories. For example, Kremer and others have published several papers showing that low intensity millimeter waves produce biological effects. They have also shown that not only are the effects seen at very tow power, but they are also frequency-specific. "

Tyler goes on to discuss the results of this new thinking and the possible effects of these low energy radiations in terms of information transfer and storage, and their effects on the nervous system. Research has shown that very specific frequencies cause very specific reactions, and, once a critical threshold is passed, negative reactions occur.334 The key to Pandora's box has been turned, and the box has now been opened. Will it result in life or death?

Tyler's paper created a good deaL of controversy but was based upon good research and an in-depth knowledge of the subject matter covered. In the decade since

332 Low-Intensity Conflict and Modern Technology. Lt Col. David J. Dean USAF, Editof, Air University Press, Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, June 1986.
333 ibid.
334 ibid.

its publication, the public debate on the material has continued to grow, even though many of the sources cited in these pages have limited distribution.

The topics in this section could elevate the debate on military technologies. What will these areas of research yield? Should citizens take a greater interest in public affairs and remove the layers of secrecy which mask these research efforts? These are the issues we all face now, and will continue to face as we move further down the road of new technology.

"If you adequately educate your community,
you will find that the politicians will be scrambling to
become better educated themselves."

Helen Caldicott, M.D., Missile Envy

PART FOUR

STOP THE "MUSIC"

Chapter Twenty-five

PLAYING THE HAARP

The HAARP program funding was temporarily frozen in 1995 by the United States Senate. Yet the project moved forward, funded from unknown sources. The activity was on schedule for the most part, and it included the normal kinds of start-up activity. The schedule was as follows:

* December 18-22, 1994. This period was used to integrate the system through a number of tests.

* January 18-25, 1995. The system integration phase of testing was continued.

* February 21 - March 2, 1995. A number of performance tests were run on the system.

* March 29 - April 13, 1995. Formal testing of the device was done.

* July 25 - August 10, 1995. Improvement evaluations were made, to correct problems with the transmitter. Low power testing was being done, in which the military "swept 5000 channels in 3.2 second sweeps between 2.8 and 10 megaHertz".
In the sweep there were three "even mode resonances" discovered which, when hit, caused a malfunction in the device. Electrical arcing occurred between the antenna array and the lightning arresters, causing a four inch diameter aluminum plug to vaporize. The only thing left of the plug was an aluminum coating it left on insulating wires when it disappeared. The interesting fact about this problem was it occurred with only 100 watts of power from each of thirty-six operating antennas.335 What unexpected things will happen when the array is fully energized?

* September 11-22, 1995. The system will be used to test patent number 5,041,834. The HIPAS facility near Fairbanks, Alaska will be used with HAARP. Both heaters will be sending energy to the same point in the ionosphere during these tests. The heating will take place at 250 - 300 kilometers above the earth. Sensing instruments will be set up in Alaska at facilities in Anchorage, Glenallen and near Fairbanks.336

* Winter/Spring 1996. Testing of earth-penetrating-tomography will begin.337 This testing is part of a $10 million 1996 appropriation for HAARP.338 This funding was provided under the Counterproliferation Support section of the U.S. federal budget, used for limiting and monitoring nuclear weapons development in other countries.

335 Memorandum from Eric Nashlund, Member of the Radio Frequency Interference Committee for HAARP dated August 2, 1995.
336 ibid.
337 HAARP Fact Sheet, Phillip's Laboratory, July 17, 1995.
338 Department of Defense Appropriation Bill, 1996, Chaired by United States Senator Ted Stevens R-Alaska, Report 104-124, pg. 190. (Provided by Steven Aftergood, Federation of American Scientists, Washington, D.C.)

The HAARP antennae are rated for 10,000 watts each at full power. In the second phase planned for HAARP the array will be increased in size in order to provide 4,700,000,000 to 10,000,000,000 watts of effective radiated power.

HAARP is going forward but there are still some mechanical problems which are delaying its progress. These delays are the result of some problems with the power levels coming from the array. The energy gain is caused by an effect referred to as "negative impedance".339 The effect was described as "more power returning to the transmitter than is outgoing from the adjacent antennas". Instead of the energy level matching with say 10,000 watts going out and 10,000 watts returning - it is returning energy at 12,000 to 18,000 watts. What does this mean? It is an unexpected result which is occurring in low energy level testing. What will happen at the higher levels of energy planned for the future is not known. Is there a HAARP acting like a harpoon - is there an accident in the making?

339 Telephone interview between Nick Begich and Eric Nashlund a member of the HAARP Radio Frequency Interference Committee, August 2, 1995.

Chapter Twenty-six

SOFT SELL, THE ENVIRONMENTAL IMPACT STATEMENT

The Environmental Impact Statement (EIS) and its public hearings were completed long ago. There is no independent monitoring of the HAARP project or of the related University experiments. With the completion of the EIS process, the hurdle of "oversight" is over for the HAARP players, and nobody is looking over their shoulders. They now work without significant public scrutiny.

This type of project, is very different from projects which are monitored continually by independent inspectors with differing program goals than military and university scientists. The ionosphere belongs to the world. The immediate area belongs to Americans/Alaskans, who should be monitoring HAARP independently of its personnel.

The authors of this book believe that the HAARP activity should be monitored by a panel of multidisciplinary scientists, without conflicts of interest, who continually review the work under the oversight of the Alaska Department of Environmental Conservation. Moreover, laws should be passed to put enforcement teeth into the monitoring. This could be done by giving the oversight committee the power to freeze all state appropriations to the University if the project presents significant dangers not disclosed by the military or University. This could halt the project if the University were otherwise unwilling to follow the recommendations of the oversight committee. In addition, as long as the local power generating company was controlled and operated as a member-owned cooperative with an elected Board of Directors, they could literally unplug HAARP if it eventually connects to the regional power grid. This could temporarily stop the project while the federal government argues in the courts about its power demand requirements.

The only real way to stop this project, and others like it though, is through international pressure. These military projects should have some international watchdog component, considering the fact that these programs could negatively impact other countries who are not declared enemies of the United States. What are the safeguards for any country tampering with atmospheric systems which we all rely on for life?

The environmental review process is supposed to explore all risks and impacts in a given project. It was the omission of significant international community review which led to disputes over thermonuclear testing, dumping waste into the open seas and other inter-national environmental problems. It is arrogant, and inexcusable, for any country to think they can create upper atmospheric energy litter without full disclosure and consent from the other countries which may, pay the price for these programs in the end.

While there may be some good effects from this technology, the negative possibilities are immense. Understanding the planet cannot occur by dissecting the ionosphere, yet another part of our living system. Environmental Impact Statements are supposed to be comprehensive and disclose all risks. These documents, and hearings, are not just some compliance hurdle to be jumped over by the military, the University and their contractors in their single minded pursuit of their program mission, These are rules intended to inform the public and protect the environment from very real hazards. What are the environmental risks which were inadequately disclosed or explored in the public documents on the project?

The Navy, Air Force and University have not adequately defined the following risks, nor provided opportunities for public testimony after-ward:

1. Issues missing in the EIS include the possible impacts on the upper atmosphere. The military and the University should describe the amplification effects which occur
in the ionosphere when Very Low Frequency radiation (VLF) impacts the magnetosphere creating a "charged particle rain" (as described in the Navy's research conducted by Lockheed and Stanford and referred to elsewhere in this book).

2. The issue of non-ionizing radiation has not been disclosed even though the Navy has cataloged and reviewed more than 1,000 research papers from around the world on this subject. The risks of this kind of systems' outputs have been explored by the Army, Navy, Air Force, CIA and others, and yet their research has not been mentioned at all in any of the HAARP records. Other records from these organizations are discussed elsewhere in this book, and will serve to dramatize the substantial risks and potential problems of the electromagnetic radiations being emitted from this system.

3. The Navy conducted international research, modeled after the work of Yale physiologist Jose MR. Delgado, M.D., which clearly showed that Extremely Low Frequency (ELF) energy waves cause significant increases in genetic mutation and alteration in animal embryos. This research may be extrapolated to infer the same kind of effects on human embryos. The use of ELF in the earth-penetrating tomography has been acknowledged by John Heckscher, HAARP Program Manager, although nowhere does he or anyone associated with the project discuss this research. The potential impact on animal life and people is never disclosed in the EIS. In fact, it is avoided, except for a couple of lines where the HAARP planners say there is no effect. When challenged on the issue, they say that the energy is being beamed up and not down, leaving out entirely the earth-penetrating tomography applications. It is likely that when challenged on this point they will say, as the government has in the past, that the energy level is small and not harmful. They have said it is about the same as that which naturally occurs in the earth. Even if this were true, research has shown that energy at l/50th of the Earth's natural strength - when pulsed in the right waveform, at the right frequency - will cause harmful physiological and psychological effects. The military is not disclosing their own research in this very important area.

4. Another one of HAARP's tricks, described by the military (see previous chapter) is moving the ionosphere in such a way as to allow satellites to operate in the space previously occupied by that section of the ionosphere. What does this do? It makes a hole so that all living things under that hole are irradiated, instead of being naturally shielded from them, The ionosphere is our natural umbrella which lets the good parts of the electromagnetic spectrum in and filters out the bad. Making holes without describing these risks is a gross miscarriage of responsibility by our university professors and defenders of peace - people that Americans, and all citizens of the world, should be able to trust.

5. The Eastlund patents also discuss molecular manipulation and weather manipulation. These applications are forbidden by international agreements, and are avoided in the HAARP documents. They are clearly described in the Eastlund patents and are alluded to in other govern-mental records.

These are the most glaring risks which require further clarification by our government. It is important that these and other possible risks be assessed independently through a process more complete than the normal Environmental Impact Statement. The ionosphere is not any country's national asset; it is an international asset and should not be tampered with unless all countries take part in the decisions which might otherwise result in our mutual demise. Are we so arrogant as a country to believe that we are the gods of the upper atmosphere and the keepers of the keys to possibly life and death on Earth?

Chapter Twenty-seven

PANDORA'S BOX AND THE GREAT TEMPTATION

Some will say that the government would not do the kinds of things described in these pages. The compilers of this material wish this were the case. However, American history is littered with the carcasses of bad science and ill-conceived technologies. Each year, in fact each month, it seems the citizens of all of the countries of the world are introduced to new scandals of military, "intelligence" and governmental abuses. The temptation, the compulsion, and the addiction for more power and control over people are the first evils released from the Pandora's Box of modern gadgetry. The authors are not against technological advancement but, rather, hope science can be pursued in the open light of day and can lead toward improved human conditions.

"Political strategists are tempted to exploit research on the brain and human behavior. Geophysicist Gordon J. FMacDonald - specialist in problems of warfare - says accurately-timed, artificially-excited electronic strokes 'could lead to a pattern of oscillations that produce relatively high power levels over certain regions of the earth...In this way, one could develop a system that would seriously impair the brain performance of very large populations in selected regions over an extended period'...No matter how deeply disturbing the thought of using the environment to manipulate behavior for national advantages to some, the technology permitting such use will very probably develop within the next few decades. "340

This statement was made over twenty-five years ago, and was a precursor for what became reality in 1995.

In 1966, MacDonald was a member of the President's Science Advisory Committee and later a member of the President's Council on Environmental Quality. He published papers on the use of environmental control technologies for military purposes. The most profound comment he made as a geophysicist was, "The key to geophysical warfare is the identification of environmental instabilities to which the addition of a small amount of energy would release vastly greater amounts of energy."341 While yesterday's geophysicists predicted today's advances, the HAARP program managers are delivering on the vision.

The geophysicists recognized that adding energy to the environmental soup could have large effects. What was not considered is the fact that humanity has already added substantial amounts of electromagnetic energy into our environment without understanding what might constitute critical mass. The questions come... have these additions been without effect, or is there a cumulative amount beyond which irreparable damage can be done? Is HAARP another step in a journey from which we cannot turn back? Are we about to embark on another energy experiment which unleashes another set of demons from Pandora's box?

340 Between Two Ages: America's Role in the Technetronic Era, Zbigniew Brzezinski, Penguin Books, Mass. 1976

341 The Cooling, by Lowell Ponte, 1976, pges. 166-169.

As early as 1970, Zbigniew Brzezinski, later National Security Advisor to President Jimmy Carter, predicted a "more controlled and directed society" would gradually appear, linked to technology. This society would be dominated by an elite group which impresses voters by allegedly superior scientific know-how.

"Unhindered by the restraints of traditional liberal values, this elite would not hesitate to achieve its political ends by using the latest modern techniques for influencing public behavior and keeping society under close surveillance and control. Technical and scientific momentum would then feed on the situation it exploits" 342, Brzezinski predicted.

His forecasts proved accurate beyond what most people would have expected. Today, a number of new tools for the "elite" are emerging, and the temptation to use them increases steadily. The policies to permit use are already in place. We are at the door to our "brave new world".

How would the United States be changed, bit by bit, into the predicted highly controlled technosociety? Among the "steppingstones" Brzezinski expected were persisting social crises and use of the mass media to gain the public's confidence.343

Brzezinski apparently saw that both conservatives and "the doctrinaire left" might be inclined to justify heavy handed tactics. The left could say that it serves progress, and the conservatives "preoccupied with public order and fascinated by modern gadgetry, would be tempted to use the new techniques as a response to unrest, since they would fail to recognize that social control is not the only way to deal with rapid social change."344

Even today, February 25, 1995, as we write these words, NBC Nightly News is announcing the widespread domestic surveillance of Americans and others, through the CIA's and NSA's monitoring and intrusion into the global Internet. When does the proliferation of power end and a new compact with freedom begin?

Brzezinski's vision, expressed in his book 25 years ago, was a prophetic view of the state of the world. It predicted a direction which time has proven correct, in terms of outcome. Those predictions yet to be realized are profound, and could lead to a very different and less desirable world, The idea that science is the hammer of politicians is a reality which people can not ignore. Government should consider a shift - from war to peace - for the use of these very advanced research efforts.

The possibilities of these innovations offer all people an opportunity to excel in health and intelligence. All men and women should press for opening these technologies to positive and constructive, rather than destructive, purposes. What

342 Between Two Ages: America's Role in the Technetronic Era. Zbigniew Brzezinski, Penguin Books, Mass. 1976,
343 Ibid.
344 Ibid.

propels these advances into the wrong directions'? It is the tax dollars of unwitting Americans.

The system which can promote the use of science, for the true advancement of mankind, is an open system with a focus on individual opportunities for self actualization. Systems which promote secrecy by military and intelligence leaders are fundamentally wrong. They are too likely to be misused, which has been amply demonstrated in govern-mental systems. Government flows from the people, and should be a full reflection of the value and belief systems of people, and not some shadow of the will of those with secret agendas, hidden in the dark rooms of paranoia. We must press government to reflect our collective views towards a more balanced world, embracing foundational ideas upon which good governments are formed.

Chapter Twenty-eight

POWER AND CONTROL
THE END OF FREEDOM

The Manhattan Project which developed the first atomic bomb started in 1942. The first atomic bomb was exploded on July 16, 1945 more than 50 years ago. That project started with a $6,000 funding appropriation to the Uranium Committee and ended, by 1945, at $1.7 billion ($20 billion today). The total cost of the United States nuclear weapons program since the Manhattan Project has been $4 trillion - 80% of the entire national debt on the government books in 3995.345 Is HAARP another program about to plunge the world into a rash of waste and human misery?

The War Against Democracy

"The buzzwords haunting the Pentagon today are 'revolution in military affairs', The idea, simply put, is that the same technologies that have transformed the American workplace may have no less profound an effect on the American way of war. "346

This concept, "revolution in military affairs" (RMA), first emerged in a document issued by the U.S. Army War College in July, 1994 - The Revolution in Military Affairs.347 This document said a philosophy of "conflict short of war" ("terrorism, insurgency or violence associated with narcotrafficking") requires new weapons and a change in public opinion. It asserts that this change in opinion does not have to evolve naturally, but can be deliberately shaped by the government. The idea is that belief systems of Americans can be slowly altered to allow the military to introduce new weapons technology which, at this time, would be resisted by most Americans.

What this book puts forward is:

"In its purest sense, revolution brings change that is permanent, fundamental, and rapid. The basic premise of the revolution in military affairs (RMA) is simple: throughout history, warfare usually developed in an evolutionary fashion, but occasionally ideas and inventions combined to propel dramatic and decisive change. This not only affected the application of military force, but often altered the geopolitical balance in favor of those who mastered the new form of warfare."

The Revolution in Military Affairs describes "people's wars", which it limits to Marxist ideologies. The phrase could be equally applied to what occurred in the Philippines and to Eastern Europe's popular revolutions in the late 1980's. The

345 U.S. News & World Report, "Outlook, Database", July 17, 1995.
346 Eliot A Cohen, "Come the Revolution", Defense and Technology Issue; National Review, July 31, 1995, Vol XLVII, No. 14.
347 The Revolution in Military Affairs, toy Steven Metz and James Kievit, July 25, 1994, U.S Government Printing Office: 1994-504-111/00089.

military's writers say that there is a shift to "spiritual" and "commercial" insurgencies, which they do not define well. They imply that these kinds of "insurgencies" represent national security risks to be defended against. This may be the case but, who will decide what is "spiritually" or "commercially" correct?

The military's authors discuss emerging technologies which may go against Americans' beliefs in such things as the presumption of innocence, the right to disagree with the government, and the right to free expression and movement throughout the world. At one point in the document they discuss the need to use new technology to keep track of Americans traveling out of the United States:

"While advances in robotics and information technologies may make it possible to perform many commercial activities with fewer employees in dangerous regions, those Americans who are overseas will be more isolated and dispersed. This complicates the main problems of NEOs (noncombatant evacuation operations): identification and notification of the individuals to be evacuated, identification of safe routes, and assessment of threats to the evacuation. Technology could diminish these problems. In the near future every American at risk could be equipped with an electronic individual position locator device (IPLD). The device, derived from the electronic bracelet used to control some criminal offenders or parolees,would continuously inform a central data bank of the individuals' locations. Eventually such a device could be permanently implanted under the skin, with automatic remote activation either upon departure from the U.S. territory (while passing through the security screening system at the airport, for example) or by transmission of a NEO alert code to areas of conflict. Implantation would help preclude removal of the device (although, of course, some terrorists might be willing to remove a portion of the hostage's body if they knew where the device was implanted). The IPLD could also act as a form of IFFN (identification friend, foe or neutral) if U.S. military personnel were equipped with appropriate challenge/response devices."

The most likely people to receive the implants are military personnel who will be told that this will help rescue them if they are captured. They may be the first, setting the stage for the rest of the country. Will our military personnel object? Will our defenders recognize that this is an invasion by our government into the rights guaranteed by our Constitution - a Constitution they have sworn to defend?

Another technology mentioned is a method for interfering with activities the government judges to be wrong. In the examples given, most of us would agree intervention should take place at some level. However, the methods contemplated are extreme. Will those with the power to invade the privacy of individuals do so and without just cause? Will the holders of the power be trusted by the rest of the population? The military planners anticipate a resounding - "NO"! There-fore, they propose a series of events to shift the popular view to the opposite extreme. They propose a revolution of society which will allow for a Revolution in Military Affairs. At this point, they lay out a fictional scenario where the illusion of the need for this

kind of control could be created. In the scenario, a plan to desensitize the population to increasing control and, introduction of the new technology, through systematic manipulation and disinformation by the government is initiated. What they have put forward might even be underway.

E-Systems developed Global Positioning System (GPS)348 technologies (satellite based) which can locate objects anywhere in the world within one foot of the object's actual location. They also developed systems for law enforcement which can intercept faxed messages, telephone calls, modem transfers, and video transmissions on a single system. They developed the EMASS computers which are powerful enough to sort the volumes of information needed for tracking billions of people. They were the owners of HAARP, under their controlling company, Raytheon.

Under their nonfiction scenario the military's writers say:

"For example, remote intrusive monitoring of the financial computer networks of offshore banks could identify the deposits associated with money laundering. If desired, such accounts could be electronically emptied."

In another section, the document emphasizes behavior and attitude alteration. This is the very heart of an RMA.

"Greatly improved intelligence gathering and fusion is a primary component of the RMA, and proposed information warfare capabilities might be ideally suited for helping develop desired emotions, attitudes, or behavior."

The entire text of this little book will leave readers wondering - If this is the kind of material the military is letting out for public review, what are they hiding in those billion dollar "black budgets"? In another section The Revolution in Military Affairs discusses the reality of the RMA:

"Even with all the constraints and countermeasures, there is some value in applying emerging technology using existing strategy, doctrine, organization, force structure, objectives, concepts, attitudes and norms. But there is another alternative: we could deliberately engineer a comprehensive revolution, seeking utter transformation rather than simply an expeditious use of new technology. However alluring, such a program is rife with hidden dangers and unintended consequences. Unlike the Manhattan Project, we are not forced to pursue revolution without considering the implications. In conflict short of war, RMA is a Pandora's box desperately in need of careful scrutiny before opening".

The National Review article quoted earlier in this chapter says that this box has already been opened and that the concept of an RMA is already occupying the best minds in the Pentagon. (The Revolution in Military Affairs, has been reprinted and is available - see Resource Guide at the end of this book for ordering information.)

348 "E-Systems, Inc. Nineteen ninety-four Annual Report to Stockholders"; March 10,1995.

The Cold War is not over, but has changed. We know that there are concerns which, being a free people, we must address and bring to the attention of others. We believe that the greatest threat to freedom is an over-oppressive and increasingly secretive government. To many, the government has shifted from one "of the people, by the people and for the people" to a government "of special interests, for their own benefit, at the people's expense". What went wrong, and where it went wrong, to a large extent, is a product of the intelligence bureaucracies which thrive through one administration to the next with unrestrained growth. These secretive bureaucracies hide more and more of their secrets under a cloak of "national security", while drifting further from the principles which have allowed the United States to exist for over two hundred years. Secret government policy is not sanctioned by the free will of the population, and threatens the core beliefs of liberty, honest government and public responsibility.

The only truly free people are those who live in an open society, a society which cherishes above all the right of men and women to control and set the values that their government should reflect. These are the popularly set values which must be pressed into the philosophy of all projects, policies and programs our governments seek to project into reality. No program should be permitted to grow out of democratic governments which does not reflect the values and will of those governed. There have been too many Watergates, Irangates, and political wars which have only served politicians and protected corporate America. Our military and economic policies are increasingly empty of the values upon which our democratic forms of government rest.

When we look at HAARP documents, we see that the military, the contractors and the University of Alaska all appear to have deliberately misled the public and elected officials.

In other projects - tike proposed nuclear excavation discussed earlier - it was the biologists at the University who objected. In the HAARP project, the environmental, biological and life sciences are again not explored enough. Given its potential impacts, the project should be subjected to continuous rigorous independent review by specialists in the life sciences and atmospheric science. Those deriving their incomes and future positions from HAARP-type projects should not be called upon to be the guardians of the interests of the rest of the world. It is impossible for these geophysicists to have had all of the training required to assess all of the risks. This is not to say that Institute scientists are reckless in their approach, but are they fully aware of the potential environmental and health risks?

Is HAARP the beginning of the "Brave New World"? It is time to think about a change in the way we allow our government to evolve - into oppressor rather than servant. Our system of democracy was set up to serve and enhance life, liberty and the pursuit of happiness. Are these dead concepts? We think not, it is time to rise from the ashes of our apathy and take a step to improve our world.

"Magnetism is a unifying factor that interlinks all events,
forms and life on Earth."
International Earth Emergency Network[349]

"Everything is connected to everything to everything else,
especially by the electromagnetic spectrum."
Philip S. Callahan, Ph.D., author, The Paramagnetic ELF Forces

"It's insane to bounce our atmosphere around with what's holding the atmosphere
to the planet in the first place."
Daniel Winter, Ph. D.

Chapter Twenty-nine

A CLEAR NOTE

Nick Begich's exploration of the HAARP protest took him literally to the ends of the land. In July 1995 he and Shelah took their children to Homer, the community in a location that Alaskan's call Land's End. While setting up camp on the beach, they were greeted with hearty Alaskan bear hugs by one of the activists with whom Nick had been corresponding. Like others from the bush country who chose anonymity in their NO HAARP activities, he will be known by a pseudonym, Joe.

Joe turned out to be a sturdily built man, nearing middle age, who obviously cares deeply about his planet. Perhaps too deeply. Although living on a subsistence income, he had spent too much on the NO HAARP campaign, had become exhausted, and had only recently recuperated. His perception of being isolated had been an emotional challenge during the previous year, as he personally dealt with the concerns outlined in this book. Now, however, he realized the strength that comes from connection with a network of people who share his concerns: Joe has learned that people can make a difference.

Reading the first draft manuscript for this book, Joe noticed that independent scientists were expressing much of what he felt. For example, Dr. Elizabeth Rauscher and William van Bise ended a scientific paper by pointing out that most of the recent technologies have stripped nature away from people.350 Too many technologists' aim seem to be "to shield us from nature, to 'conquer' and control her while designing ever more dangerous weapons systems with which to more efficiently strip all life from the planet", they said. The two concerned scientists had added that "we must examine why man has moved toward such insane motivation, toward mutual destruction..." They concluded that we must ask whether or not society will again decide to pursue noble objectives..."

349 Dr. Daniel Winter and friends, International Earth Emergency Network, Waynesville NC 28786, E-mail: danwinter@aol.com; and Dr. B.K. Wee, World Research Information Center, 22 White House Park, Singapore 1025; voice 65-323-2032; fax 65-235-9862.
350 Elizabeth Rauscher and Wm. van Bise, "Fundamental Excitatory Modes of the Earth and Earth-Ionosphere Resonant Cavity", Proceedings of the 1988 International Tesla Symposium Colorado Springs.

Meanwhile, individuals such as the Alaskan activists do what they can. Clare Zickuhr handed over to Joe the job of co-coordinating the No HAARP campaign before Clare and Barbara sold their house and went traveling. (His employment had ended, through ARCO cutbacks and early retirements in 1994.)

Dr. Bernard Eastlund's ideas continued to be mentioned, but not in the media that he preferred. Reporters for small publications and radio talk shows noted the connection between his patents and HAARP, but unfortunately many of those reports were inaccurate in some of the details. The accurate reports, however, raised common questions. Will those scientists who punch the ionosphere with gigawatt pulses be remembered as the true mad scientists of the century? The spirit of sorcerer's apprentices is alive in those who get National Science Foundation grants to "turn on the northern lights by heating the ionosphere with radio waves" and stir up "magnetospheric substorms".35l

While the Begiches discussed these issues with fellow Alaskans, coauthor Jeane Manning put a call through to one of the increasingly rare generalists with a Ph.D. in science, Philip Callahan, an expert on radio systems/electronics as well as biology. He sums up the situation in plain words: "Every living human being is like a sponge in a bowl of jelly. When the atmospheric jelly shakes - the ELF waves - then the jelly in the sponge also shakes at the same frequency."352

Callahan has sharp words for the people who are putting up HAARP "... talking about shooting a hole in the ionosphere. They don't know a hill of beans about the ionosphere! There's nothing wrong with studying Mother Nature and then copying her. But they're trying to jam up the system, that's the problem."

Callahan knows low frequency systems; he put them up in Japan for the U.S. defense department before he went back to school and became an entomologist and biophysicist. (With his multidisciplinary interests, he learned it is possible to tune into unwanted insects by knowing the resonant frequency of an insect's antenna. Because of this knowledge, he has been fighting insecticide use for 35 years. The non- poisonous alternative, on the other hand, jams the insects' homing beacon system with electromagnetic static.)

Jeane Manning asked him if HAARP is any threat to the insects of the world, and Callahan replied "Yes. It's bound to be, because their antennas are tuned into some of the frequencies that will bounce down from HAARP's ionospheric modification."

He was working for a government agency when the ionospheric-modification plan heated up. "I got a call from them; they wanted to know what I thought it would do to insects. I said 'You'll probably mess some of them up, because it messes up the insects under the power lines...I've seen night time moths flying around and feeding in the daytime when they're under power lines. I've also seen them

351 Neil M. Brice, "Method and Apparatus for Triggering a Substantial Change in Earth Characteristics and Measuring Earth Changes", U.S. Patent No. 4,042,196.

352 Dr. Philip Callahan's recent books, Exploring the Spectrum and Paramagnetism are available from Acres USA, Po box 8800, Metairie, LA. 70011, Ph. 504-889-2100.

under power lines feeding until they swell up and burst. So what it boils down to is, it's like when insecticides came out - we don't know what they do."

HAARP is going ahead, however, despite the warning of possible biological effects. Callahan adds, "Nobody's studying it; they just sit there and say 'there's no harm in it'. Out of sight, out of mind."

FORBID THE CENTIMETER-WAVES!

Dr. Wolfgang Volkrodt of West Germany takes an extreme position on this challenge facing the people of Earth.353 "Centimeter-wave technology must disappear from our environment! We need a UNO (United Nations Organization) charter which would prohibit the entire field of electromagnetic wave technology which causes disastrous resonance in biological systems," Volkrodt insists, He calls
for monitoring centers that can detect use of the prohibited wavelengths anywhere, even those harmful wavelengths beamed from satellites.

While the authors see a total ban on microwave relay and radio frequency technology as being unrealistic, we agree with Volkrodt that there is widespread denial of the hazards. Dr. Volkrodt says "the path seems long and arduous until our politicians realize what is happening in the research institutes of the super powers, and what explosive findings will confront the inhabitants of this endangered world before the end of this century. Let us hope that those in positions of responsibility will awake before it is too late."

The authors interviewed other experts whose warnings were more low-key. For example, James Beale of Louisiana, whose career has been in a variety of electromagnetic research venues, regrets to see that there are not many experts on bioelectromagnetics, and fewer still who are independent of military contracts. Furthermore, said Beale, those experts prefer to talk among themselves instead of with the public. "This is where you need bridge science', which is what is going to come about by talking on the Internet."

Bridging between specialties, and between scientists and the public, is one of the most pressing needs uncovered by our research. It isn't hard to do. Today's engineers can walk into a library or across campus to the biological sciences departments and find stacks of information about the inter-relatedness of Earth's electrical, magnetic and biological systems. But to what extent do they bother to look outside their own specialty?

The life sciences such as biology look at the web of connections between living organisms and Earth's natural systems. Sciences which deal with what is dead or mechanical are over- represented in the board rooms where military projects are conceived, bought and sold. For example, one engineer commented on the educational background of Col. John A. Alexander, chief spokesman for the U.S. military's "non-lethal" weapons campaign. "He's the only person I've met who brags about having a degree in thanatology, the study of death."

353 Raum & Zeit, Vol. 1, Nov. 2, 1989, pg. 57.

As we look back at the messes humanity made while industrializing this world, leading-edge thinking has evolved beyond the goal of dominion over nature. Instead, an emerging outlook respects each form of life as having an integrity of its own while at the same time inter- related to all species.

Nikola Tesla's thinking was a product of his times, and therefore his genius was limited by a sometimes mechanistic viewpoint. Tesla wanted his inventions to help humanity. He can be excused for not mentioning ecology, because in his time the word had not been coined yet. As a trailblazing technophile, he thought it would be exciting to manipulate weather and light up the ionosphere just as you would charge up the contents of a fluorescent bulb. He imagined the upper atmosphere glowing over a selected region of cities to illuminate the earth at night. This megaproject mindset lives on, a century later.

What has happened to Tesla's ideas of sending vast amounts of electrical power wirelessly? The ideas are out of date, now that inventors are making rapid advances in tapping the free energy in space which Tesla prophesied could be used. (The topic is beyond the scope of this book, but we will mention that in 1995 John Hutchison, mentioned in chapter one, was one of those who successfully built such an invention - a small scale electricity generating device that could make the central power station obsolete.) Nevertheless, it seems that engineers are still fascinated by wireless concepts. A paper presented to an engineering society[354] talks about Tesla's idea to use the electrically-conductive layers in the upper atmosphere as the conductive path, and other possibilities for beaming power. We excerpt a comment from the Weather Modification section of the paper: "Since the potential of the electrosphere is about 300 KV relative to the earth, and the wireless system as proposed by Tesla was designed to operate at 30-100 MV, there is a significant potential for electrically disturbing the atmosphere. It is not known whether this would be beneficial or harmful."

Under the heading of Economic Viability, the paper notes, "Multiple transmitters could conceivably be phased to control the location of antinodes from which power could be extracted,.." (By the way, the paper's 76 footnotes includes the Eastlund/Ramo patent 4,712,155, "Method and Apparatus for Creating an Artificial Electron Cyclotron Heating Region of Plasma", cited under the heading Transmission Line Coupling. The often cited patents...)

In his autobiography, Tesla said the impulse that dominated him was "to harness the energies of nature to the service of man." A fine sentiment, but it can be carried too far when the Sorcerer's Apprentices try to harness the electric rivers in the sky through HAARP.

The tones of voices talking about HAARP range from helpless anger to calm determination. The man called Gregory whom you met in Chapter One, on the one end, had shouted that the "Mad scientists are getting even with all the crap they had to put up with as kids and as nerdy adolescents, and they want to kill our planet!"

354 Kurt L. VanVoorhies, P.E., and James E. Smith, Ph.D., "The Promises and Prospects of Worldwide Wireless Power Transfer: An Overview", 1991 Intersoctety Energy Conversion Engineering Conference proceedings.

On the other hand, with a scientist's habit of understatement Rosalie Bertell, Ph.D. said about HAARP: "I am also concerned."[355] She was writing a book for the Women's Press in London, England, on a broader but related topic - militarism and the environment.

HOW DO WE TURN IT AROUND?

Dr. Bertell says women can help reverse the destructive trends. Bertell, who holds a doctorate degree in biometry and has worked on cancer/birth defect research for decades, documents the impact, on the earth's environment, of war preparation. [356]

"Because of the non violent tendencies of women and their interpersonal skills already developed, it is imperative that women take their rightful place in decision making. This is especially true of participation in strategic "think tanks", military command posts and areas of international law."

She further points out that resolving conflict without excessive damage to our life-support system is not purely a women's skill, nor do all women have it. But admitting women into the circles of power could open the doors.

Dr. Bertell suggests guidelines for recovery from our addiction to violence. Here is a shortened list of her recommendations:

* "Acknowledge that war is not a natural human trait but rather a learned behavior..."

* "Embrace justice and international equity as a way to peace."

* "Demand environmental impact hearings on all military undertakings, including the space programs. Unmask the self-destructive tendencies of war making. Freeze military budgets at the current level, and every year reduce them by 20 per cent, putting the savings into UN currency that can only be used for human needs." (Environmental cleanup included.)

* "Learn to love and appreciate biological organisms...and the intricacies of the web of life."

* "Teach your children to make peace, to break the habits of violence."

* "See yourself as one with your planet home, 'a child of the universe, capable of feeling a blow to any part of the life system anywhere in the universe. The web of life is intricately interconnected and fragile. Fracture it and we are all doomed."

* * *

355 From a June 2,1994, letter to Jeane Manning from Dr. Rosalie Bertell, International Institute of Concern for Public Health, 830 Bathurst St., Toronto, Ont. M5R 3G1,
356 Rosalie Bertell, "Exposing the Agenda of the Military Establishment", Sept. 1993 Ecodecision,

The authors of this book don't expect life scientists or women to suddenly appear around the tables in the Pentagon in significant numbers. However, our hope is that a wider range of voices will be increasingly heard when decisions are made about whether to violate the integrity of a huge natural system such as Earth's ionosphere. Or whether to violate the very consciousness of the people on this planet.

As long as the macho attitudes prevail, people with taxpayers' money in their pockets will try to "engineer" planetary systems. As more and more ordinary people realize that the U.S. military wants to experiment with the earth's electrical shield, they express feelings akin to the scientist Dr. Malcolm portrayed in the film Jurassic Park. He said he was staggered by the lack of humility before nature - men wielding an awesome power, "like a kid that's found his dad's gun."

Not all engineers are enthusiastic about wielding big guns, of course. An engineer from Europe told Manning that he doesn't want to jump to conclusions, but he pictures the emanations from the HAARP apparatus as creating nodes in the upper atmosphere, "where they superimpose on one another and have a resonating and amplifying effect." He asks "how can we have the slightest idea what that will do to the planetary environment?"

The editor of Acres USA, commenting on a letter about HAARP, is blunt. "We have had enough of scientists going off half-cocked."

Meanwhile, Dr. Robert Becker expresses his opinion that "the military establishment still believes that the survival of the military organism is worth the sacrifice of the lives and health of large segments of the American population."

The authors of this book are neither technophiliac nor anti-military. However, military funded technology has been allowed to steamroll over the planet. Isn't it time for educated citizens to cut the allowances of the big boys and supervise them more closely? Isn't it time for fear based thinking to be replaced by the more grownup policy of love and consideration?

That may sound abstract and unscientific, until the skeptic has a serious dialogue with frontier scientists such as Dr. Daniel Winter, author of Alphabet of the Heart and co-founder of the Earth Grid Emergency Network.357 In a letter to Manning, he said "the key concept to under-standing how HAARP will undermine our planet is the principle that charge recursion - or maximum possible fractal embeddedness in spin systems - is what creates gravity in the first place."

Recursion is the repeating of patterns within patterns in nature. Whether or not the reader understands his cross disciplinary discussions - of nature's fractal symmetry, harmonics series, platonic series at the atomic level, spin geometry, resonance, coherence and trees as antennae - the emerging science that Winter writes about shines a powerful light of both hope and warning. There is hope for stabilizing

357 Daniel Winter and Friends, Alphabet of the Heart: Sacred Geometry , 137 Biodome Drive, Waynesville, NC 28786. E-mail DanWinter@aol.com

both Earth's crust and its atmosphere. Winter cites experiments that seem to prove the principle that "fractality of (electromagnetic) charge creates gravity." Such features of the magnetic grid keep an atmosphere nestled around a planet.

On the other hand, his warnings include this:

"Mars lost her atmosphere; we're losing ours. Let's understand why microwave coherence around long wave magnetic domains creates microclimates, before we decide to aggravate Earth with poisonous gigawatts of power to poke away at her atmosphere. The long-term question of gene pool survival depends on the skill of learning to retain atmosphere. HAARP is a very poor start at demonstrating that our gene pool has the skill to terraform planets."

"Particularly now, with Earth's orbital pole doing radical excursions out of tilt - with the lunar orbit destabilizing - and with the ability to hold atmosphere and ozone weakening, particularly at the poles, the planet is very sensitive to bouncing the atmosphere in and out for scientists' gigawatt 'probes',"

Dan Winter concluded: "HAARP stands to slice a huge tear in the fractal of magnetic Alaska, Earth will feel this change in charge, as a tearing wound that will not heal..."

The authors suggest that anyone concerned about HAARP contact a federal legislator to protest, and insist that life sciences get meaningful funding and decision making power. And that emerging advanced technologies be in the hands of our wisest men and women, not our most aggressive or those entrenched in the biggest budgets.

We hope that independent scientists will meet face to face as well as on the Internet, regarding HAARP related topics. An international symposium is urgently needed. Philanthropists could help with travel and research funding for the scientists, because independent thinkers have been blackballed out of the high salaried jobs. For example, financially struggling consultants cannot even afford the yearly fees now charged for accessing National Oceanic and Atmospheric Administration (NASA) data.

Researchers who shun the "black budget" world of military programs need a "white budget". White-budget projects could include the spreading of ground up volcanic rock to restore Earth's paramagnetism.358 Dr. Callahan says that chemical agriculture and clear cutting of forests caused the soil's paramagnetic ingredients to change or wash into the sea.) Such constructive projects could be carried out by ordinary people all over the world, replacing feelings of fear with those of empowerment.

358 For study of paramagnetism as a part of the glue which holds the atmosphere in place, see recent books by Dr. Philip Callahan, available from Acres USA, PO box 8800, Metairie, LA 70011-8800. Fax 504-889-2777.

In Brave New World Revisited. Aldous Huxley said, in 1958;

"Meanwhile there is still some freedom left in the world..some of us believe that without freedom a human being cannot become fully human, and that freedom is therefore supremely valuable. Perhaps the forces that now menace freedom are too strong to be resisted for long. It is still our duty to do whatever we can to resist them."

On the road to that goal, other thinkers point toward a possible manmade barrier. They question whether an increasingly stressful electromagnetic environment is interfering with clear thinking on a large scale. If so, then society's ignorance of this invisible crazymaker is the problem. Humanity has the resources to change its technologies if we have the political will to do so. Non-scientists must educate themselves on the issues and speak up; the sciences as a self regulating system seems to have broken down. The breakup of the sciences into ever- narrower specialties has made it difficult for specialists to synthesize a wide range of facts about our planet and come up with wisdom.

GLOSSARY

Electromagnetic field (EM field). A force field which radiates out from any moving electrical current. They have both an electric field and a magnetic field and move in a direction away from the electric current.

Electromagnetic pulse (EMP). A pulse or blast of electromagnetic energy. These kinds of pulses are caused by nuclear explosions and can be created with an electrical device. The pulses created can cause electrical circuits to burn out.

Electromagnetic spectrum. This refers to a continuum which organizes electromagnetic fields based on their relative number of oscillations or frequency. Nonionizing portions of the electromagnetic spectrum starts with zero (no oscillations) extending to visible light with trillions of oscillations peT second. Frequencies which are above that of visible light are said to be ionizing. Ionizing frequencies include X-rays and cosmic rays, among others. The spectrum is divided into various parts based upon their usage including ELF, microwaves, radiowaves, etc.

Extremely Low Frequency (ELF). 0 - 1000 cycles or pulses per second.

Field. A area around a source of electric or magnetic energy where in which a measurable force exists. This is sometimes referred to as radiation because it radiates out, and away, from the source.

Hertz (Hz). The frequency - number of pulses, cycles or oscillations per second. One thousand cycles per second equals one kiloHertz (KHz); one million equals one megaHertz (MHz); and, one billion equals one gigaHertz (GHz).

Ion. An atom which has either a positive or negative charge because it has either gained or lost an electron.

Ionizing. The production of ions from atoms by exposure to radiation with enough energy to dislodge electrons.

Microwave. The part of the electromagnetic spectrum from 500 million cycles per second up to visible light.

Nonionizing radiation. The part of the electromagnetic spectrum from zero to the frequencies of visible light.

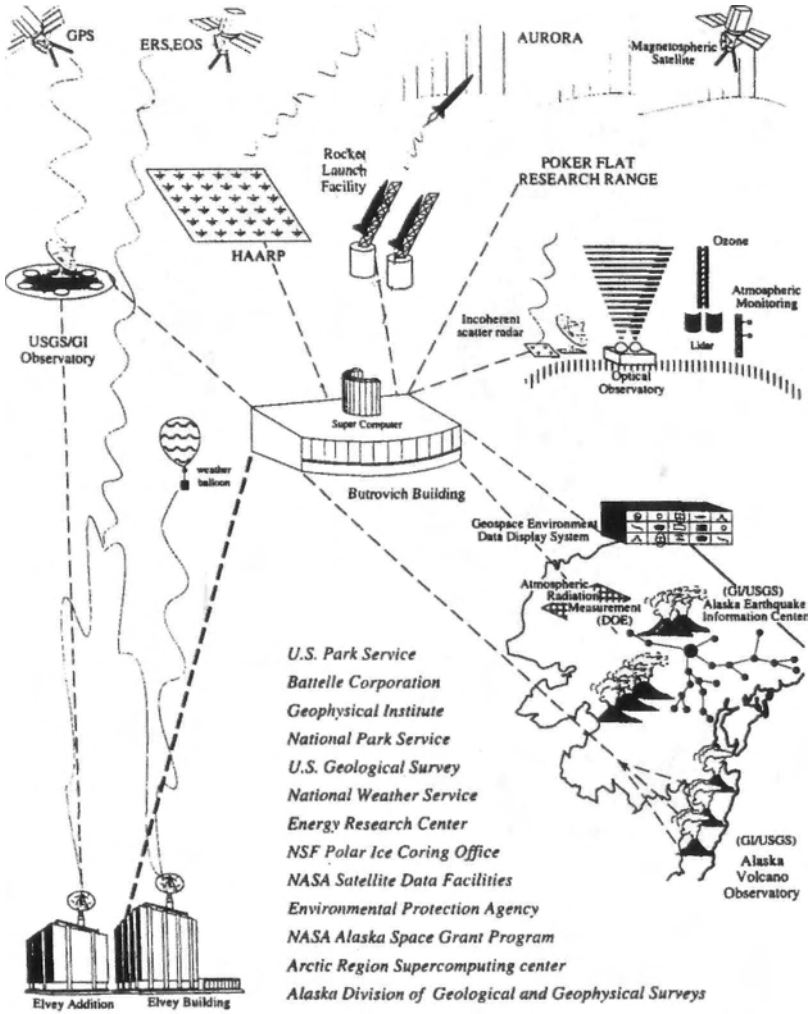
Radio frequency (RF). The part of the electromagnetic spectrum from .5 million cycles per second through 500 million cycles per second.

Very low frequency (VLF). The part of the electromagnetic spectrum from 1000 cycles per second through .5 million cycles per second.

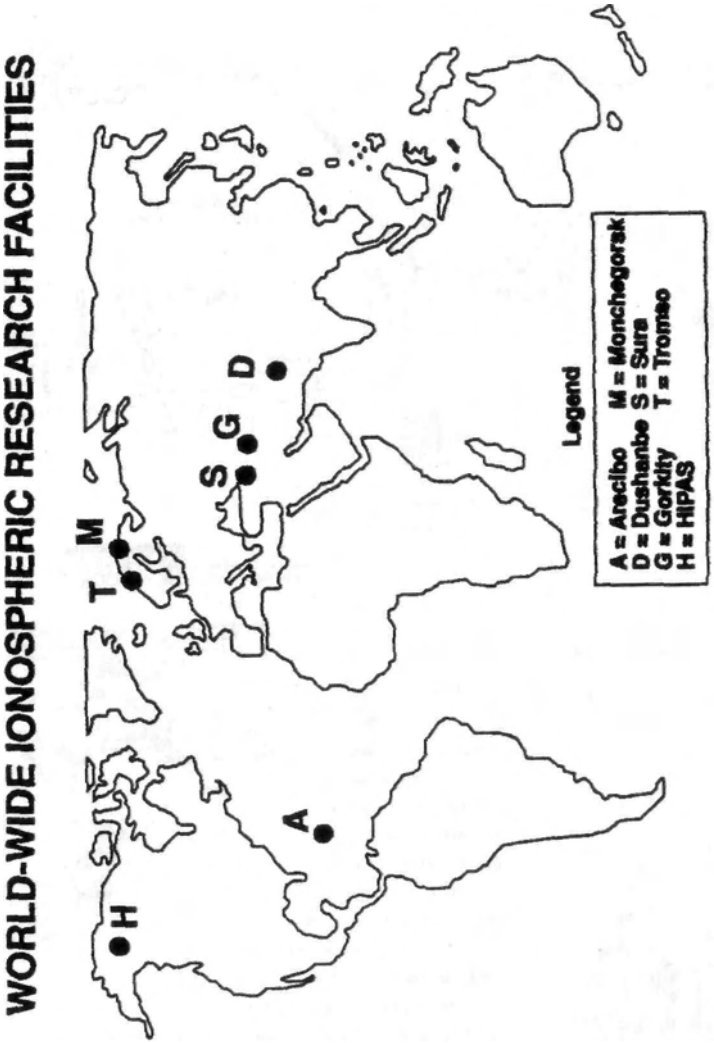
ILLUSTRATIONS

HAARP

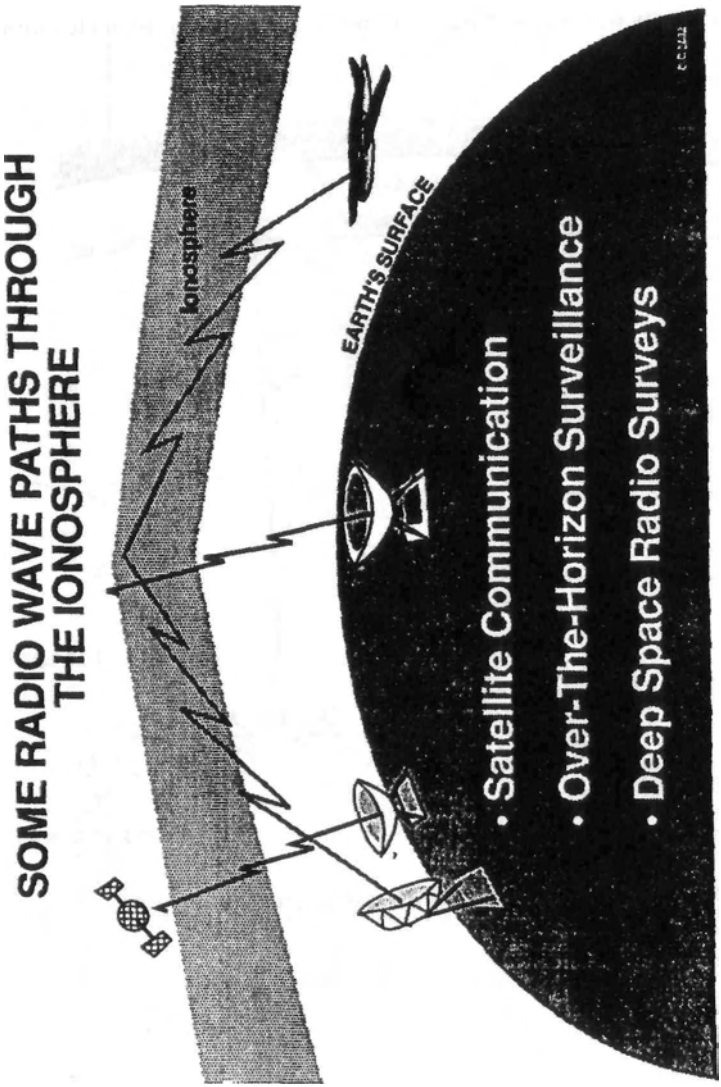
The diagram was taken from the "Biennial Report 1991-92, Geophysical Institute, University of Alaska Fairbanks". It shows the interrelationships of the various programs being operated by the University.



This diagram appeared in the Environmental Impact Statement on HAARP on page 10-127, Volume II. It shows the locations of other "ionospheric heaters" that are now operating. These other "heaters" are much smaller and less versatile than the new HAARP transmitter.



This illustration was taken from the HAARP Environmental Impact Statement, page 10-126 Volume II. It shows a number of the applications of the technology which the military planners have acknowledged.



The diagram below (taken from government records) shows the focusing power of the HAARP ionospheric heaters. This diagram shows the unique feature of Eastlunds idea - to focus the energy to a point in the ionosphere. Other ionospheric heaters project the energy in the opposite way with the energy beam getting wider and wider as it moves up into the atmosphere. The new heater concentrates the energy whereas with the old technology the energy dissipates with height.

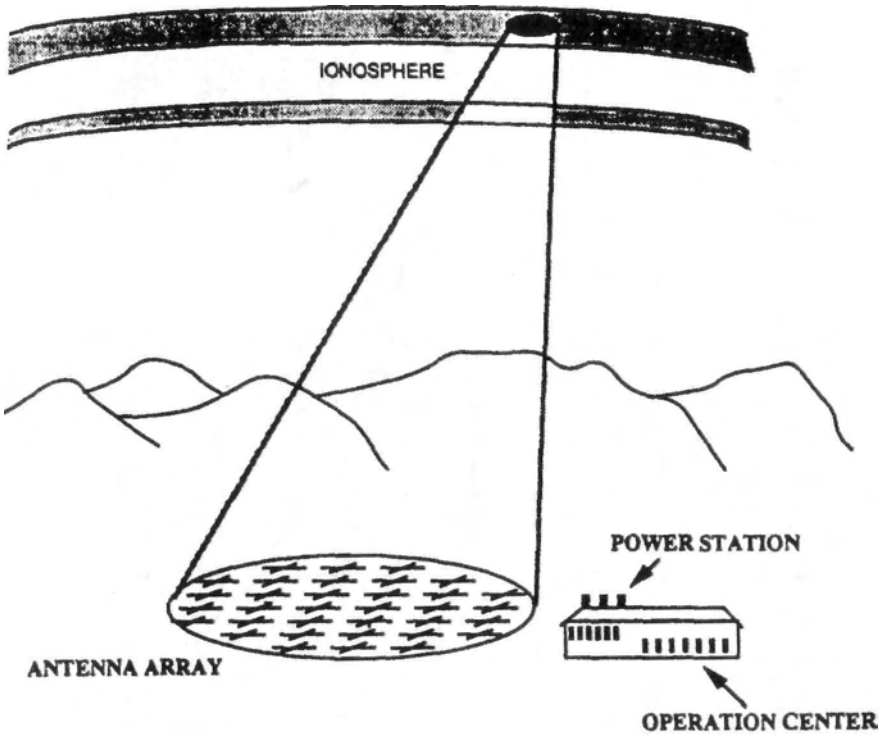
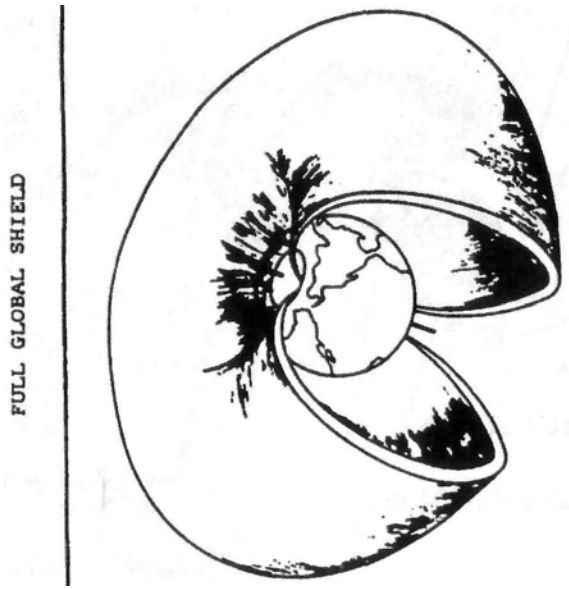
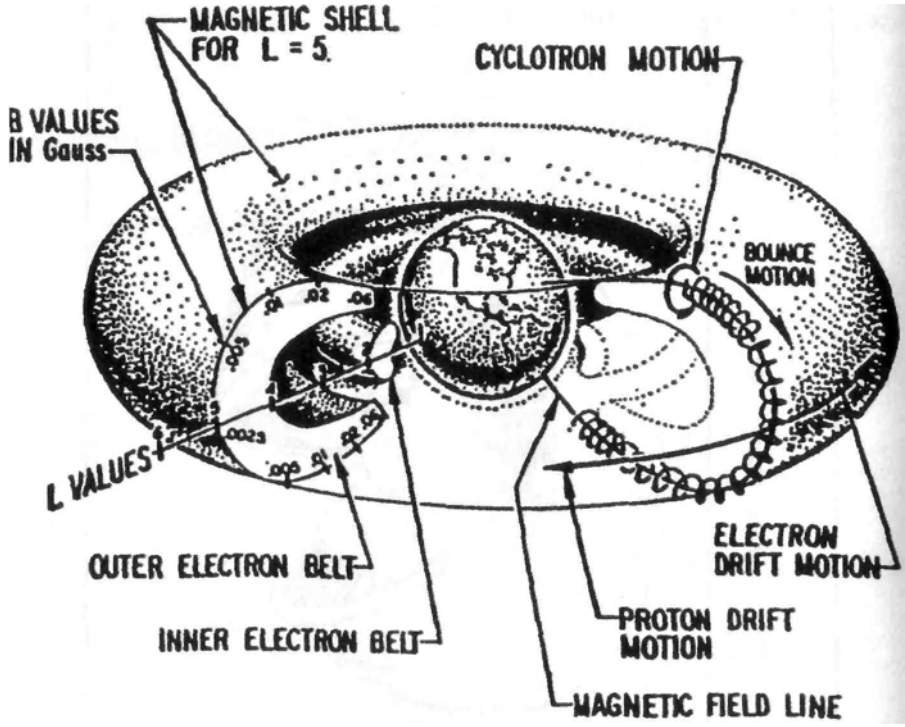


FIGURE 1. Ionospheric Research Instrument Conceptual Drawing

This diagram was also drawn by Eastlund to show the effect of his full sized heater. It shows the charged particle motion in the Earth's Geomagnetic Field.

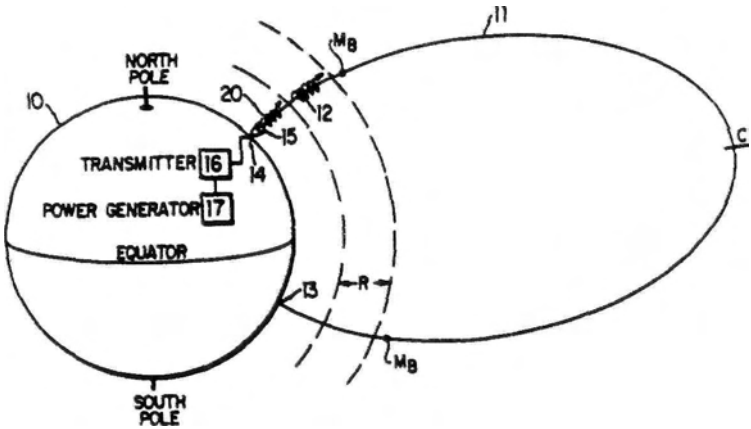


This diagram below was drawn by Eastlund to illustrate his global shield concept.

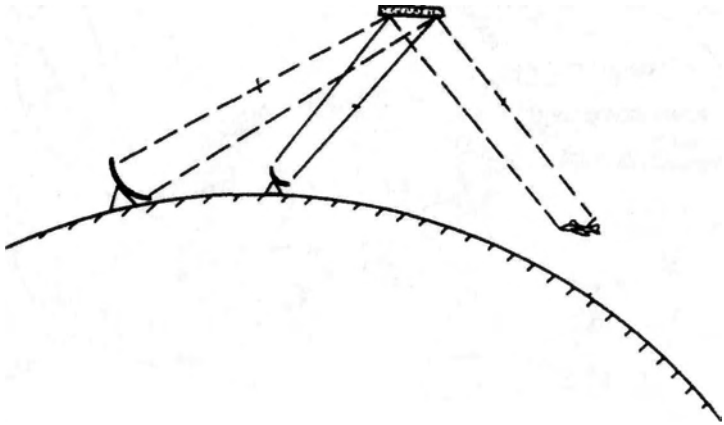


Charged Parttcle Motion in Earth's Geomagnetic Field

This diagram below was taken from the primary U.S. Patent of Eastiund (4,686,605).

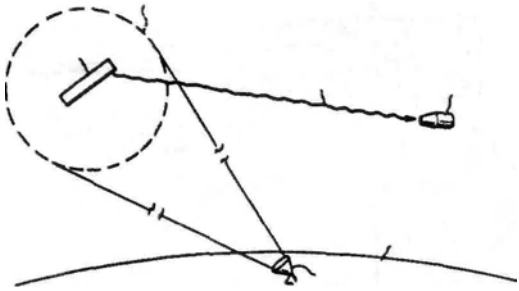


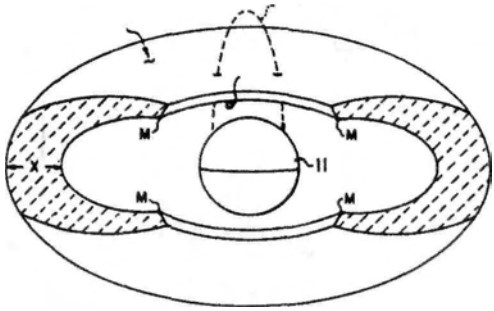
This diagram shows the over-the horizon radar applications of the HAARP technology. This diagram was from U.S. Patent #4,999,637 which was based, in part, on Eastlund's patents #4,686,605 and #4,712,155.



The diagrams below appear in U.S. Patent #5,038,664 and #4,817,495 and depict the shielding and discriminating effects of the HAARP heater at full size.

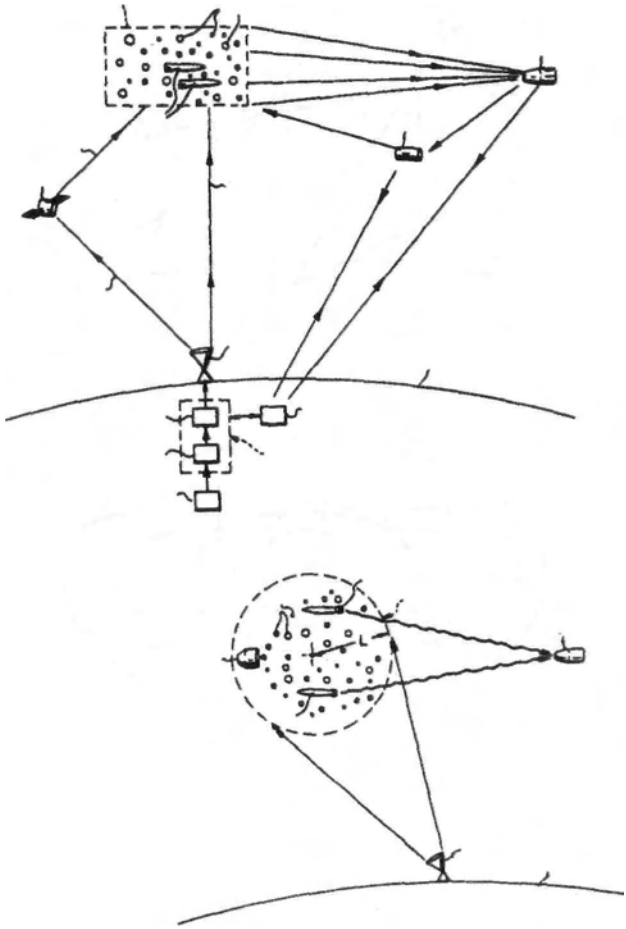
US. Patent Apr. 4,1989 4,817,495



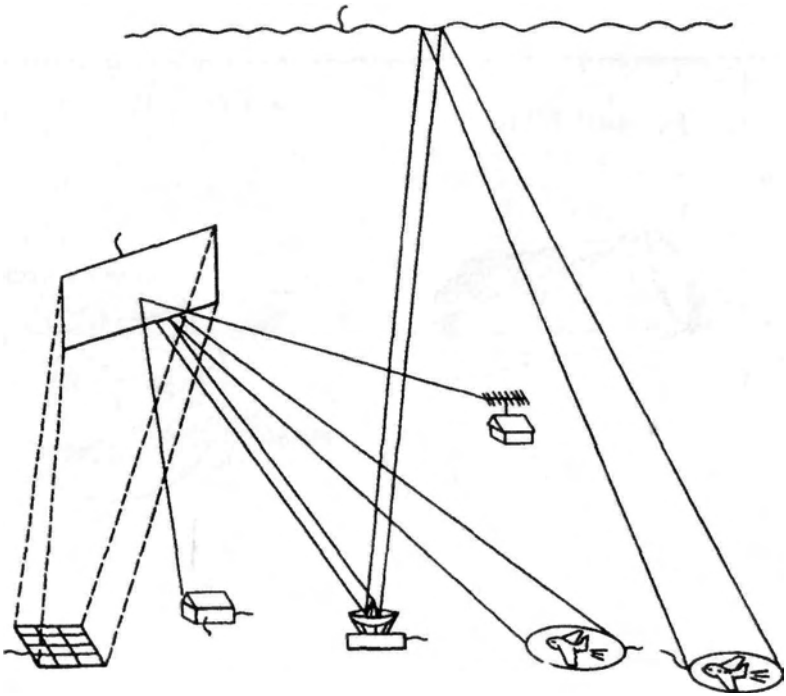


these diagrams were taken from patent #4,817,495. They show the HAARP system being used to locate and distinguish between incoming objects from space. This application of the system would be used for determining the nature of payloads on incoming crafts in order to locate those carrying nuclear warheads.

US. Patent Apr.4,1989 4,817,495

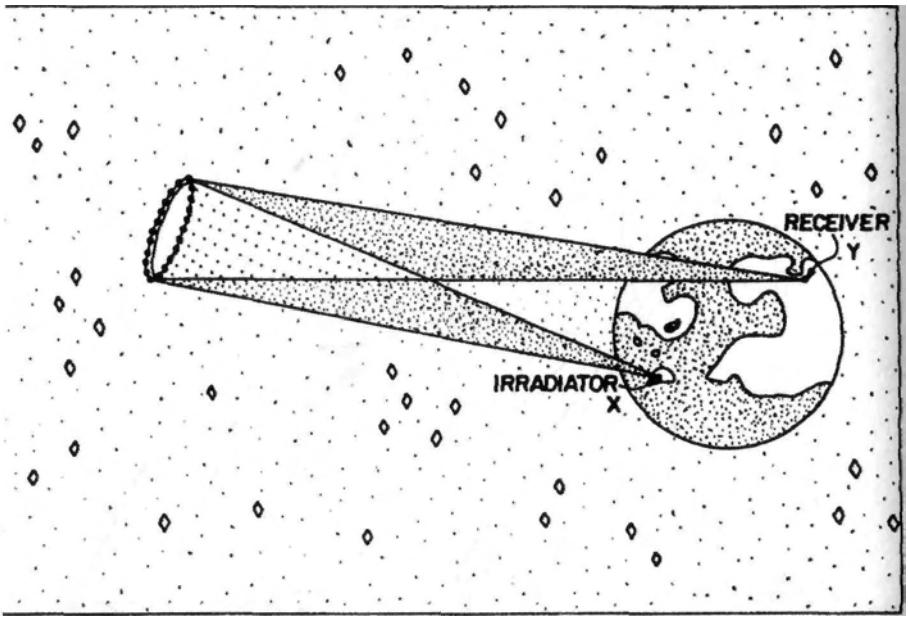


This diagram was taken from U.S. Patent #5,041,834 and shows the over-the-horizon applications of the HAARP technology. 1 is the HAARP heater. 2 is an artificially created mirror in the atmosphere which is used to bounce a signal for use in communications and distinguishing between incoming objects.

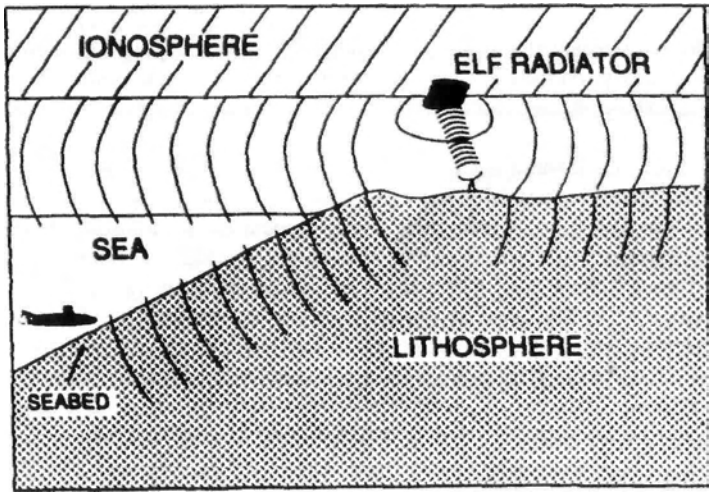


This diagram shows part of the power beaming systems described in the patents. This illustration show an energy beam being projected from the Earth into space and bounced to a remote tocation thereby providing power to a point where it would otherwise not be available.

U.S. Patent Apr. 13, 1993 5,202,689



This illustration is from presentations made at the HAARP Workshop on Ionospheric Heating Diagnostics which was held April 30 - May 2, 1991 at Phillips Laboratory (AFSC) Hanscom AFB, Massachusetts. The illustration shows graphically how the ionosphere will be used to bounce Extremely Low Frequency (ELF) waves through the earth and atmosphere. The waves in this picture are being used for communication with submarines. These ELF waves can disrupt mental functions and may impact wildlife migration patterns.



HAARP continues to occupy a significant amount of our attention and has remained the focus of much of our current work. We have had the opportunity to speak out about this project in numerous radio and television programs. In addition, a number of news articles have begun to be published throughout the country on this very important subject. We are thankful to all of the media people which have granted us time to bring our work out in front of the citizenry. The issue has not slowed down in terms of general interest in the topic. The story has served as a catalyst for involvement in political and governmental affairs for many individuals.

We have received a number of articles and news clippings from across the country which has provided a good deal of material for use in this publication. One of the most interesting pieces of information arrived just after the book was published.

An article, "Behind the Russian SDI Offer: A Scientific, Technological, and Strategic Revolution", appeared in the magazine 21st Century in the summer of 1993. The article was based on a front page story appearing in a Soviet government newspaper, Izvestia, on April 2, 1993. The article disclosed a whole new area of science and invited the United States to participate in the joint development of this new technology in a "Star Wars" weapons program. The initiative indicated that the Russians were far ahead in many of the areas important to the development of this "Star Wars" technology. One of the key components of the Russian technology was their greater under-standing of "nonlinear" processes involved in the generation, propagation and absorption of powerful pulses of electromagnetic radiations.

What are "nonlinear" processes? This relates to the idea of a small input of additional energy creating a disproportionally larger output of energy. A research scientist, Al Zielinski, recently sent us the following example of nonlinear effects:

Experiment #1

Imagine we had an unlimited amount of dominoes and we lined them up from here to, let's say, Paris. Then we could tip the first domino with 10 grams; it will fall down and cause the second domino to tumble, too, etc. The first action of 10 grams will cause all the dominoes to tumble including the last domino in Paris,

Prom this experiment we should understand that it b not the 10 gram action that causes all the dominoes to tumble, but the 10 gram action just creates an imbalance of the first domino. It is the gravity, however, that causes the dominoes to fall. In other words: only a 10 gram action is required to trigger a gravitational activity of all our dominoes from here to Paris.

Experiment #2

Imagine we had an unlimited amount of special dominoes of which only the first one we line up here is of normal size, and all the subsequent dominoes we line up

again from here to Paris are of continuously increased size. By the time we reached Paris, the last domino block would be 1000 meters high and weigh millions of ions. Again we tip the first domino here with 10 grams, which will fall down causing all the subsequent dominoes to tumble. By the time the gravitational action reaches Paris, the last domino in Paris will smash the Eiffel Tower.

From this experiment we should understand that it is not the 10 gram action here that will smash the Eiffel Tower in Paris, but it is the gravitational energy that is picked up on the way to Paris that smashes the Eiffel Tower.

In other words: only a 10 gram action is required to trigger a non-linear gravitational activity which will cause the destruction of the Eiffel Tower.

With the above examples in mind imagine the nonlinear effects of 1 billion watts of effective radiated power being directed at the ionosphere by the HAARP transmitter. This is the first phase capability of the project. The second phase will increase the effective radiated power levels even further- to 4.7 billion watts! In our book we point out that energy in certain frequencies when reaching the outermost portions of the ionosphere can be amplified up to 1000 times by natural processes. This phenomena has been recorded by scientists at UCLA who have observed the results of these power amplifications at a fraction of the power level which HAARP will transfer to this region. This is extremely important in considering what may occur with this level of energy. A serious environmental disaster may well be the result.

The earlier referenced article from 21st Century magazine goes on to describe the implications of the use of phased array antennas and their potentials at 1 billion watt power levels. This is the antenna array HAARP uses and the level of power it is designed to broadcast. What the article describes is a system which can be used for knocking down missiles and aircraft by effecting their guidance systems and creating atmospheric disturbances which lead to them crashing. They also talk about the ability, at lower power levels, to be able to look down from the ionosphere and detect cruise missiles and other incoming objects utilizing what was described as an advanced form of radar. Again this is exactly what has been described in the HAARP patents.

Plasma is a term for an electrically conductive state of matter generated from a gas. It can be created by action of extreme heat, powerful electromagnetic fields and by high levels of focused radio frequency energy such as the energy created with the HAARP instrument. 21st Century magazine suggests that, "The term plasmoid refers to the fact that under certain conditions a plasma can develop a self-contained, self-stabilizing structure based on the magnetic and other effects of internal configurations of electric currents within the plasma," This particular concept is important when referring to the concept of "painting the ionosphere" which was described by the military in the HAARP documents. This is in fact what the military will do with HAARP for certain applications. These plasmas are much different than those described in fusion research in that they involve very low electron energies.

What is known is that although they are "cool" by comparison to fusion plasmas they are remarkably long lived and strong when generated in certain gases. Those specific gases include nitrogen and oxygen, the major components of the earth's atmosphere!

So what does all of this translate into? According to the article it is suggested that this technology can be used for modifying the ionosphere over very large areas for "over-the-horizons" telecommunications disruption, creating computer errors and perhaps even creating negative biological effects. What is known from other government documents, HAARP planning documents and International Red Cross documents is that all of this is possible with these new systems. What is also known now is that a single complex system can combine radar tracking with a speed-of-light means of destruction - the plasmoid. This is but one application of HAARP. The writers of the 21st Century article were not acquainted with the patents regarding HAARP or they would have recognized that the United States military was not interested in the Russian overture of cooperation because we already possessed the means to produce these effects. What also rings throughout the article brings us back to where we began our research into the HAARP system two years ago - to the ideas of Nikola Tesla.

A New York Times article of December 8, 1915 says:

"Nikola Tesla, the inventor, has filed patent applications on the essential parts of a machine, possibilities which test a layman's imagination and promise a parallel of Thor's shooting thunderbolts from the sky to punish those who had angered the gods...Suffice it to say that the invention will go through space with a speed of 300 miles a second, a manless ship without propelling engine or wings sent by electricity to any desired point on the globe on its errand of destruction, if destruction its manipulator wishes to effect.

'It is not a time, said Dr. Tesla yesterday, 'to go into the details of this thing. It is founded upon a principle that means great things in peace; it can be used for great things in war. But I repeat, this is no time to talk of such things.'

'It is perfectly practicable to transmit electrical energy without wires and produce destructive effects at a distance. I have already constructed a wireless transmitter which makes this possible, and have described it in my technical publications, among which I refer to my patent number 1,119,732 recently granted. With transmitters of this kind we are enabled to project electrical energy in any amount to any distance and apply it for innumerable purposes, both in war and peace. Through the universal adoption of this system, ideal conditions for the maintenance of law and order will be realized, for then the energy necessary to the enforcement of right and justice will be normally productive, yet potential, and in any moment available, for attack and defense. The power transmitted need not be necessarily destructive, far, if distance is made to depend upon it, its withdrawal or supply will bring about the same results as those now accomplished by force of arms'

A second article also appeared in the New York Times, on September 22, 1940 and read:

"Nikola Tesla, one of the truly great inventors, who celebrated his eighty-fourth birthday on July 10, tells the writer that he stands ready to divulge to the United States government the secret of his 'teleforce', with which, he said, airplane motors would be melted at a distance of 250 miles, so that an invisible Chinese Wall of Defense would be built around the country..."

"This 'teleforce', he said, is based upon an entirely new principle of physics that 'no one has ever dreamed about', different from the principle embodied in his inventions relating to the transmission of electrical power from a distance, for which he has received a number of basic patents. This new type of force, Mr. Tesla said, would operate through a beam one one hundred-millionth of a square centimeter in diameter, and could be generated from a special plant that would cost no more than $2,000,000 and would take only about three months to construct."

"The beam, he states, involves four new inventions, two of which already have been tested. One of these is a method and apparatus for producing rays 'and other manifestations of energy' in free air, eliminating the necessity for a high vacuum; a second is a method and process for producing 'very great electrical force'; the third is a method for amplifying this force and the fourth is a new method for producing 'a tremendous electrical repelling force'. This would be the projector, or gun, of the system. The voltage for propelling the beam to its objective, according to the inventor, will attain a potential of 50,000,000 volts."

"With this enormous voltage, he said, microscopic electrical particles of matter will be catapulted on their mission of defensive destruction. He has been working on this invention, he added, for many years and has recently made a number of improvements in it."

As the ideas reverberate through my mind I cannot help but to feel that we again are walking down a darkened road of destruction. We are again on a path which may in fact lead to greater problems than those we seek to solve by tampering with the ionosphere.

In March 1996 the military begins to demonstrate the earth-penetrating-tomography applications of this technology -the idea of "x-raying" the earth with ELF waves generated by HAARP. These waves will pass through every living thing in the path and may have perceptible effects on people's health. This demonstration of this capability is critical for the military to gain the additional funding for the second phase of their project. That phase was originally estimated at $175 million dollars and will give the military power levels of 4.7 billion watts of effective radiated power.

Politically, things are only beginning to move as the opposition to this project continues to grow. Researchers, independent scientists and most importantly

lay people, all over the world are beginning to let their ideas be felt on this very important issue. Elsewhere in this microbook is an essay on creating political realities. We ask all of our readers to consider taking a step for change and activating some of the ideas contained in that essay.

LOOKING THROUGH THE EARTH
Radio Tomography of Geologic Strata

By Brooks A. Agnew

When the energy crisis of the 1970's seemed real enough to affect the prices of crude oil sufficiently to inspire domestic drilling, it seemed everyone wanted to invest in oil & gas. Drillers resurrected shallow rigs from old Ingersoll Rand units to even older hammer drillers. Lease speculation was very lucrative. Even owners of fields of sagebrush or Kentucky fescue were making millions of dollars off high density drilling - called "checkerboards " by oil drillers - whether they found oil or not. The people who ended up paying in the long run were the taxpayers. One of the very nice enticements to invest in oil speculation was the tax break.

This environment meant that there was often funding for new technology which could offer some advantage over the normal ten percent odds of locating a wildcat well. Such was the case for a visionary approach to oil and gas exploration. My theory was that each chemical bond had a resonant frequency which could be detected and mapped if excited with harmonic wavelengths of radiation at low power levels. This was already being done with IR spectrometers in some lab instruments, but no one had ever tried it with harmonic radio waves broadcast into the earth.

The major obstacle to lab testing with radio waves turned out to be the signal to noise ratio. What inspired me to begin developing this technology in the summer of 1993 was a phenomenon that occurred while surveying a known oil field for a new well site. My team and I were using twenty-five watt marine radios with half wave whip antennae. Normally these radios will reach out ten to fifteen miles without any trouble. We were within eyesight of each other, say a quarter of a mile apart, and could not communicate across the oil field. There was a magnetic fissure caused by a quake or mild plate shift in the petroliferous structure beneath us. The radio signal was virtually shunted into the ground which silenced the six meter marine radios. The apparent signal to noise ratio was very high under these conditions. These subtle magnetic shifts are what dowsers detect with forked sticks or metal rods held loosely by hand.

I decided right away to quantify the drop in radio frequency (RF) power. I had a pair of old Yaesu HAM base units that were capable of broadcasting a constant two meter wave. The broadcasting unit was about five watts sent through a quarter wave four-element square wave antenna pointed straight into the ground; exactly zero degrees. The receiving unit was moved at least as far away as the petroliferous

formation was deep. That is to say, the well pump was about 850 feet deep so we moved the receiver about 900 feet away from the broadcasting unit. The receiving antenna was a quarter wave four-element square wave that was mounted on a transit stand with a precision inclinometer.

Both units were mobile. The broadcasting unit was mounted on a Yamaha 250cc four wheel all terrain vehicle equipped with a two-way radio as well. The receiving unit was inside a modified four-wheel drive Chevy van and tied to a spectrographic analyzer that could read out in third octaves. The signal strength was monitored on a multi range analog dB meter. The phenomenon was verified when the mobile broadcasting unit passed over the fissure. The signal dropped over 60 dB to almost absolute silence. I say almost, because there was still something clearly indicated on the spectrograph.

When the transmitting unit was held stationary pointing directly to the center of the earth, right over the petroliferous fissure, the receiving unit could scan from parallel with the ground to about 50 degrees below parallel in line with the broadcasting unit. The spectrum would change as the receiving antenna was scanned through the layers of rock, shale, water, gas, oil, or open caves that were beneath the surface This was remarkable enough to record. What was discovered over the next three years would confirm the above mentioned theory beyond any reasonable doubt. The actual depth of the various formations was determined through simple triangulation. Multiplying the tangent of the receiving angle by the distance away from the transmitting unit provided the depth of the formation being scanned. A laser distance meter and an oversized inclinometer proved to be very precise.

Each day our crew would travel to oil fields in the Western Kentucky area. The transmitting and receiving stations were set up in alternating radii around a particular well site. The spectrographic information was compared to actual drill cutting samples obtained each five feet when the hole was originally drilled. After six months on these sites, we were able to positively identify rock formations by interpreting the spectra. The variables of reported sun spots, electromagnetic radiation from high power transmission lines, and all types weather were considered carefully. The reliability and repeatability of the technique were astonishingly high.

The following year I took the equipment and technology into the field as an exploration unit for hire. I was convinced the technology was quite robust after the fifth wildcat well was discovered. There was one instance around Burkesville, Kentucky that really turned some heads in the local oil and gas industry. My crew was asked to "survey" a lease that was claimed to have already six operating wells. Upon arrival at 7:30 AM we observed six well-maintained pumps that were spaced the mandatory 400 feet across a well-manicured farm field. After walking the area we decided to scan the very center of the field so the receiving unit was set up about a thousand feet off the property.

The days are rather long, hot, and humid in Kentucky in the summer. By 8:00 PM on the second day 1 had asked the mobile transmitter to drive a total of about 60 miles around and around this field 1 made about 100 prints of the spectra. There was

no indication of oil or gas on this property. The entire crew was hot and tired. How could there be 6 operating wells on this property without any indication from the readings we were collecting? I personally looked inside each of the six oil tanks and saw my reflection in the crude oil. What was wrong? We were being paid to report what we found and I was very nervous about what I saw.

I knew from thousands of hours with this equipment that it did not lie. I decided to make my report on the data we collected. The land owner and lease holders were furious. They were relying upon our results to sell another investment group another well site on this farm. I stood by my report. There was no oil indicated on this property. Reluctantly our clients paid, and we left. About ten days later I was recounting this experience with a local geologist. He laughed and expressed his confidence in out equipment. He informed me that those wells were all fakes. They did not even have pumps on the end of the steel. The holes on that farm were only about 50 feet deep. The entire scene was fabricated to entice foreigners to invest in drilling another hole, which of course would be dry. I breathed a long sigh of relief and learned to believe what I saw in the spectra.

After locating another seven wells in the Coniferous, Warsaw, and Cyprus formations of Kentucky ranging from 480 to about 1250 feet deep, we accepted contracts to go exploring in the San Marcus, Texas area. The formations in this region are volcanic chimneys which are very difficult to locate with seismographic methods. The sites we examined had many holes where dynamite had been used to set up shock waves which echo back to geophones. These vibrations can be mapped to reveal cavities in the substrata. Sometimes these cavities contain oil or gas. These petroliferous chimneys sometimes are only a few yards in diameter and practically vertical. This type of formation does not respond well to seismic mapping. We scanned thousands of acres for about three weeks. The only formation we located had already been tapped about thirty years prior and exhausted. The explanation 1 offered the lease holders was. "The oil is where we find it."

The next challenge came in the overthrust area of Wyoming outside Evanston. The exploration site covered land outside a national park. Our environmental friendliness allows us to explore anywhere that will allow a 4 wheeler with a spark arrester. We discouraged this particular oil company from drilling. They took our advice, and I believe they saved a million dollars. The other well we examined was a hole being drilled by Quazar. The rig was already seventeen thousand feet down. This type of rig uses various weights of drill mud to contain high pressure subterranean releases and carry the cuttings to the surface. Drilling mud is pumped through the drill steel and is forced to the surface along the clearance between the drill pipe and the edge of the hole. This mud is closely analyzed by mudloggers who chart the structures and discoveries. Hydrogen Sulfide alarms set up around the Kelly - the unit that turns the drill pipe - protect the crew from sudden exposure.

This was the first time the technology had been tested on formations that deep. We spent one day scanning the site. We spent another day preparing a radio tomographical map of the strata below their drill rig, Our results were compared to the mud log. Although we were not allowed to keep a copy of the log, as it did cost the

investors over a million dollars, I can tell you that each change in formation matched perfectly. I can also tell you that the hole was dry. This site had been selected using Landsats satellite photos of the surface of the earth which illuminate fractures and subterranean fissures and surface gamma ray scanning. The best guess the petroleum experts could muster was a million dollar dry hole.

Upon returning to Kentucky, I decided to incorporate gamma ray mapping into the data collection scheme. As it turned out a 4' crystal positioned a few inches from the ground on the four-wheeler produced timely results. Radon gas migrates up through the earth from who knows where. It can seep through any geological structure except petroliferous zones. Like upside down rain, radon gas migrates to the edges of these zones and then makes its way to the surface. These resulting halos can be detected with gamma ray mapping. The "dead zones" indicate the presence of petroleum. The velocities of the gamma collisions with the crystal detector are directly proportional to the porosity of the rock. This is very important to know. All the oil pump does is clear the hole of oil that has drained into the hole. If the formations are too tight the oil will never flow into the hole. Even fracking, a technique of pumping high pressure sulfuric acid into the target rock formation, cannot create enough pathways to allow oil to flow if the formation is too tight. We collected enough data to be able to predict the porosity of the target formation before the hole was ever drilled. Gamma ray neutron logs taken on site by Haliburton confirmed many times our ability to predict porosity within 0.5% of their measurements.

The radio tomographical techniques that I developed are the most accurate and reliable in the world When the demand for hard-to-find oil or water reserves becomes high again perhaps this technology will be valuable. As long as our country wishes to maintain its dependence on foreign erode oil, those who make money drilling dry holes will only be interested in using this technology as a marketing device. When the world is ready to find oil, water, natural gas, shale, coal, or even silver - we scanned a silver mine in Roseburg, Oregon once - this technology will be here.

HAARP Correlatives

I developed the most accurate and sensitive tomographical scanning techniques in the world using less than 30 watts of energy. The cumulative resonating energy from molecular bonds in hundreds of cubic yards of similar material could be detected and deciphered to reveal a distinctive voice of these compounds. The energy absorbed by these compounds was not detected. Instead the energy transmitted through or by these compounds, as a result of subtle and precise radiation, was interpreted scientifically.

Extrapolations are always exciting. In accounting or business it is the future gains or profits we love to imagine as we punch in numbers on an imaginary spreadsheet. In nuclear science, the weapons technology imagined by Fermi, Oppenheimer, and Einstein were mathematically possible. The actual effects of the

energy release from critical mass could not be imagined or computed. The frightening fact is that our government was insanely eager to test the equation. The situation has come up again.

Mathematically it is possible to stack antennae in a somewhat precise manner to effectively amplify a radio signal to thousands of times its original source power. The frequencies broadcasted, as I have proven for over 15 years, have exact and immediate affects on molecular bonds. When the molecular bond cannot absorb any more energy, or change it into work, heat builds in a matter of milliseconds. If this heat is intense enough the bonds comes apart. If the particles come apart with enough energy, and there is enough nearby mass with which to collide, a chain reaction begins. Once the activation energy is achieved, like striking a match, the reaction continues by itself until the source of matter is entirely converted into pure energy.

The High-frequency Active Auroral Research Project (HAARP) is designed to test the effects of billions of watts of concentrated radio energy on the ionosphere of our planet. Extremely high altitude lenses, formed with billions of cubic yards of ionic atmospheric particles, are being used to focus radio carrier waves onto the surface of our planet for military purposes. From my research I know that if the correct frequency harmonic for that carrier is chosen randomly, the result will be an absolutely catastrophic release of pure energy. The sky would literally appear to burn. What cannot be calculated or imagined is how hot the fire would be, or how long it would burn, or what elements or isotopes would remain after the reaction is complete.

The plain and simple fact is that the risk of scorching every organic molecule off of several states in a few moments, for the sake of experimenting with a new weapon, is unacceptable for the world. Only a small handful of scientists in the world know what is being done by the United States Military with HAARP. The excitement and zeal of these military children is not checked by the wisdom and experience of any civilian scientific community. Their experiments are being conducted and funded in secret. I do not think that the citizens of the world want the surprise of having half the upper atmosphere turn to flames because the HAARP technicians didn't stop to think what might happen if a couple of billion watts at the right frequency were beamed into the ionosphere during a sunstorm.

Our country has been blessed with freedom largely because we have the right to speak out against injustice or corruption. It seems most of the media have been bought and paid for by parties who wish to remain in power no matter what the people think or say. This paper is to inform you that your planet is under assault by absolute power. We need to have a civilian scientific review and publication of the results of the HAARP experiments before any more transmissions are conducted.